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ABSTRACT

Developed for newly appointed or experienced college instructors, this monograph presents a process for specifying instructional objectives. After chapter 1 provides background on the process of writing learning objectives, chapter 2 defines the terms, "goals," "objectives," "instruction," and "learning." Chapter 3 provides the instructor with a programmed lesson in how to write objectives, while chapter 4 expands on the topic in narrative form, focusing on terminal, interim, and out-of-class objectives. Implications of the process of specifying objectives are examined in chapter 5, which addresses questions concerning who should write objectives, sharing of objectives, wording of objectives, specificity of objectives, detailing outcomes, frequency of revision, student abilities, informing students, student expectations, additional uses of objectives, and grading. Chapter 6 discusses common criticisms of the process, focusing on the effort required, unanticipated outcomes, problems in establishing causal relationships between teaching and learning, and the desire to enhance the individuation process. Finally, 100 sample objectives, classified according to subject area and level of complexity, are presented. Appendices outline methods for determining student understanding of the objectives, reporting student achievement, sequencing objectives, and determining class criteria. A list of available course objectives and a 33-item annotated bibliography are also appended. (LAL)

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# OBJECTIVES OBJECTIVES

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Arthur M. Cohen

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**Arthur M. Cohen**

Graduate School of Education
University of California, Los Angeles

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*To the students of the '70's–*
*particularly Bill, Wendy,*
*Drew, and Nancy*

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# Preface

In my book, *Dateline '79: Heretical Concepts for the Community College* [9], I devised a college as it might look in 1979. The plan merged several features including, among others, ease of access for students to various media forms and sequences, a precisely defined curriculum with built-in provisions for course revision, and a faculty committed to instruction. The core concept in the college of 1979 was defined outcomes—particularly the process of specifying instructional objectives. This book expands that principle by showing how it may be applied *now* by people teaching in present-day colleges and universities.



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The staff of the ERIC (Educational Resources Information Center) Clearinghouse for Junior Colleges at the University of California, Los Angeles, aided in the preparation of this work. Michael R. Capper was particularly helpful in screening specimen objectives and in providing bibliographic support. He was assisted by Lawrence Kojaku. Other colleagues and students—especially those enrolled in the UCLA Graduate School of Education Junior College Curriculum Course—allowed me to share ideas with them. My appreciation to all nine of them.

NOTE:—The bracketed numbers in the text refer to specific, alphabetized titles in the annotated Bibliography following the Appendices at the end of the book.

# Introduction

Direction is the hallmark of every instructional enterprise. Whether the *raison d'être* of a particular educational structure is to induct youngsters into the mysteries of a tribal culture, train them to exercise technical skills in a world of specialized work, or prepare them to apply complex cognitive processes to an infinite variety of tasks, goals may be found as guiding principles of the establishment. There must be purpose or there can be no organized process of education. And the underlying purpose of all education, formal or informal, is to bring about change in students.

Within the American college and university, many forces effect such change. Counselling services help the student select appropriate opportunities and paths from among the thousands available to him in the college and in the world outside. Student activities, planned and unplanned, temper him as he attempts to organize his life, his thoughts, and his beliefs. The whole campus community has an impact on him in ways that are still largely unknown.

But the presumed effect of a college's many facets is a matter beyond the scope of this book. The intent here is to outline the process of defining instructional objectives in terms of observable changes in the students. Outcomes thus specified may serve as integral parts of any educational system, innovative or conventional, automated or ordinary, as broad as the college's whole effort, or as limited as a single instructional session.

This book is for the instructor in any type of post-secondary educational institution. The newly-appointed university teaching assistant or the experienced junior or senior college professor who wants to focus his teaching more sharply will find it helpful. It is particularly useful for the person preparing to teach in college, whether or not he is enrolled in a teacher preparation sequence. It can also serve as a reference for the instructor who is already employing specific objectives but who wants to expand his knowledge of the technique. Anyone who wants to think through the process and the implications of using precisely stated objectives in his own teaching will be aided by the ideas presented here.

The book includes seven chapters. Backgrounds and definitions are presented in Chapters I and II. These are followed in Chapter III by a programed lesson in how to write objectives (set off on yellow paper so that those who dislike the stricture of linear programing may avoid it). Chapter IV extends the objectives-writing lesson in narrative form. Chapter V deals with implications of the process and Chapter VI offers some legitimate criticisms. Several sets of specimen objectives, classified according to subject areas and levels of complexity, are duplicated in Chapter VII.

Appendices that further elaborate the use of objectives and an annotated bibliography conclude the book.

# Chapter One

# Backgrounds of the Process

The practice of specifying objectives in terms of observable student change has received widespread attention in recent years. Pioneered decades ago at the University of Chicago by Ralph Tyler [32], and since advanced by dozens of educators, the concept is now at least rudimentarily familiar to the majority of teachers at all levels of schooling. It has been examined, debated, advanced, and deplored by educators, psychologists, and others concerned with planning instruction; recent bibliographies list hundreds of articles dealing with the subject [2;6]. Although some research on the tangible effects of specifying objectives has been conducted

[5;13;25;27], most of the writing in the field has been polemical. Some authors exhort instructors to specify objectives lest ultimate evil befall them, while others, condemning all "behaviorists" to the nether world, reject the whole idea. The dialog is lively.

Although the concept has been around for a long while, the practice of specifying objectives gained impetus only when various forms of reproducible media were introduced to the colleges in the 1950's. Instructional program writers were especially instrumental in demonstrating the idea since, by definition, an auto-instructional program must cause learning. Thus, program objectives had to be spelled out in terms of changed student behavior—usually measured by differences in performance.

But although programmers turned the academic community's attention to "behavioral" objectives, the process should *not* be linked to programming. It is *itself* an instructional form. It stems from concepts basic to institutional purpose, principles of instruction, and theories of learning; hence, it goes far beyond any instructional medium. Objectives not only delineate curricular outcomes, they also have implications for a wide variety of practices.

The concept of defining learning in terms of observable or measurable changes in behavior has been examined by educational psychologists, instructional experts, and learning theorists. These specialists attempt to determine the consequences of specifying objectives, classify objectives according to various hierarchies or taxomies, and relate the process to learning and instructional theory and practice. Other educators trace the implications of defining learning within the schools and assess objectives as they impinge on or reflect educational philosophy. But though the people concerned with objectives are members of many academic disciplines, they are few in number. The concept has not yet received anything approximating a thorough examination. In common with most other educational practices, specific instructional objectives are receiving their trials in the field rather than in the laboratory.

Many instructors now specify objectives even though they are often unmindful of theoretical and philosophical implications. Some form of the art is practiced by instructors in growing numbers of schools and colleges, as well as by teachers in industrial and armed services training schools and by writers of

programed texts. In each of these cases, the people involved realize the impossibility of designing deliberate instructional sequences unless the outcomes are defined in advance—that is to say, the student must think or feel differently after the course; the equipment repairman must be able to make the machine operate after his training; the learner who works through the program must answer the criterion questions correctly. In all cases, the outcomes are specified as part of the total instructional plan.

The process of specifying objectives is timely for many reasons, particularly in view of the fact that our colleges are filled with all types of students whom it is both possible and desirable to teach. We know more about the process of human learning than we did a generation ago. It is feasible not only to arrange instructional sequences so that measurable learning comes about, but to alter instructional forms in accordance with the nature of the tasks the students will be asked to perform as well as to design and to effect specific changes. As programmed instructional materials become better developed and more widely used, the process of deliberately influencing outcomes will become more familiar in all colleges. And as "performance contracting" —public educational institutions employing private corporations to bring about specific student changes on a "no learn/no pay" basis [15;20] —spreads, the necessity for defining objectives will become even more urgent.

The context of college instruction, too, has changed since the time when it was all lecture-textbook, learn or don't learn. Formerly, teaching was so ill-defined as to be immune to valid assessment. Learning either took place in or out of class; few knew or cared particularly where or how. Because instruction was frequently pursued as a set of random activities rather than as a purposeful process, the instructor usually sorted his students on the basis of their "abilities." Term after term, the process resulted in a pattern of marks that closely resembled a curve of normal probabilities. Conversely, the current trend toward defining objectives reflects the present-day instructor's emphasis on his actual teaching. Hence, specifying course outcomes is not a fad or a mere transient approach.

If college instructors are to stay abreast of the times, then they must give serious thought to specifying the goals of their own instruction. They must work through the process in their

courses–build their objectives, specify their outcomes, collect the evidence of student learning–or be guilty of abandoning to others the responsibility they tacitly accepted when they entered the teaching profession.

# Chapter Two

# Definitions of Terms

The rationale for the use of specific instructional objectives in college courses is predicated on certain definitions. Central to the thesis of this book, these definitions are basic to the understanding of the concepts on which it is founded. Unless the reader comprehends and accepts the terms as they are defined in this chapter, he will miss the full implications of the program in Chapter Three and the text that follows.

Most terms used here hold common usage referrents. However, four words—goals, objectives, instruction, and learning—must be given particular definitions.

### Goals

*Goals are statements of the broad ranges of the students' gained abilities or tendencies.* The term indicates generally what is to become of the students who attend the college. Typical goals, for example, might be:

1) students will be able to communicate effectively;
2) students will understand scientific methodology;
3) students will learn to think critically;
4) students will appreciate American democratic processes.

As used in this context, educational goals indicate actions to be taken, skills to be learned, abilities to be gained, attitudes to be held or modified by the students as a result of their having attended the institution.

### Objectives

The second term is "objectives." As used here, an *objective is a specific, observable student action or product of student action.* To satisfy our definition, it must first specify something the student is to do; second, state the circumstances under which he will do it; and, third, note the degree of accuracy with which he will perform the action [23].

Note that both goals and objectives indicate something that is to happen to the student—in the one case, implied attitudes or abilities to be gained; in the other, specific actions or definite products of student actions. Under no circumstances will we consider "goals" or "objectives" something to be provided by the college or the instructors. To state that a college goal is "to provide opportunity for students to fulfill themselves" or that an objective is "to offer courses which meet university requirements" is inappropriate. These and similar terms come under the heading of institutional purpose and should not be confused with goals and objectives.

### Instruction

Why goals and objectives within the college? Their rationale depends on the premise that the fundamental reason for any

educational enterprise is to allow, or, better stated, to *cause* people to change—*to learn*. Education is a consequential (as opposed to a theoretical or formalistic) process of changing. All instruction is designed to lead students to perform tasks they could not perform previously, to have them think different thoughts, pursue different aims. *Instruction is the deliberate sequencing of events so that learning occurs.* It is neither a random encounter between adult and youth nor some kind of class room-centered experience without definable meaning. It is a *process*, not a group of activities in which "instructors" typically engage. It has internal order and sequence, purpose and effect.

### Learning

*Learning is changed capability for, or tendency toward, acting in particular ways.* It is a retainable quality, not one ascribable to temporary states of mind caused by drugs or fatigue. Nor is it change that occurs as a result of normal growth or maturation. It, too, is a process, one "by which an activity originates or is changed through reacting to an encountered situation." [17]

### In Sum

Learning does not necessarily depend on instruction; a changed capability for, or tendency toward, acting in particular ways may occur without an extrinsically designed and administered sequence of events. However, instruction *does* depend on learning. Either students gain changed capabilities and/or tendencies, or the instructional effort has failed ipso facto.

Goals and objectives are statements that lend direction to instruction. They enable instructors to infer the success of their efforts by assessing students' abilities before and again after the instructional sequences. And goals and objectives themselves become part of the process of instruction because they influence student learning in many ways. These are the premises on which the process of defining outcomes is based.

# Chapter Three

# A Programed Lesson in Objectives Writing

This instructional program is for people concerned with developing individual courses within a curriculum. For convenience, the program is worded as though individual faculty members were preparing objectives for individual students even though others—for example, students or colleagues—may frequently participate in the process.

The purpose of this program is to lead you, the reader, to the ability to set specific, measurable objectives for your courses so that others can understand what your instruction seeks to accomplish. You will learn to recognize objectives properly stated

and to apply criteria for objectives. As you go through the program, mark your responses to the questions before turning the page. The correct answers are noted on the page following each question.

The purpose of the college curriculum is to lead

1 students

2 instructors

to gain certain skills, attitudes, and abilities.

The correct answer is number [1] – students.

The first step in writing curricular and course objectives, then, is to determine what it is you expect the

1 student

2 instructor

to be able to do at the end of the unit.

The correct answer is [1], for if the purpose of the course is to lead *students* to certain abilities, a course objective which states that which the *instructor* will be able to do is inappropriate.

Pick the best stated objective from this list:

☐ [1] The course will cover critical thinking.

☐ [2] The student will learn to think critically.

☐ [3] The instructor will analyze the process of critical thinking.

The correct answer is [2] . Although [1] and [3] may be necessary to bring the student to the ability to think critically, objectives should be stated in terms of what the student, himself, will be doing during or after the course unit.

Here is a goal frequently included in college catalogs:

> Students will be prepared to accept the responsibilities of democratic citizenship.

Faculty members who wished to aid students' becoming responsible citizens would decide on course objectives for students to achieve. Suppose, for example, an instructor selected "Knowledge of the Bill of Rights" as one valid goal toward which his students should strive. Which of these objectives best states that goal?

☐ [1] The instructor will discuss the Bill of Rights.

☐ [2] The student will know the provisions of the Bill of Rights.

The correct response is [2], for it is student knowledge toward which we strive, not instructor's actions. The instructor might, and often does, discuss much without the students learning anything.

Suppose the instructor selected as another worthy course goal, "Understanding the differences between democratic and authoritarian behavior." Which of these objectives best states that understanding?

☐ 1 The students will recognize examples of democratic and authoritarian behavior.

☐ 2 The course will include a unit on "Democracy vs. Authoritarianism."

The correct response is [1]

The first two examples dealt with knowledge and understanding basic to responsible citizenship. Suppose our hypothetical instructor also wanted his students to hold *attitudes* favorable to democratic processes—which of these objectives best states that goal?

☐ [1] The student will appreciate the American democratic process.

☐ [2] The instructor will help the students appreciate democracy in the United States.

The correct response is [1] . It designates an attitude held by the student.

Objectives should be specified in terms of that which is to happen to students themselves. The examples given have dealt with students' knowledge, understanding, and attitudes to be gained. Objectives may also be stated in terms of skills or abilities to be gained by students. The first principle, always, is that objectives must state the ways in which *students* will change. They cannot properly be written in terms of what the instructor will do or what the course will cover.

The next matter to consider in specifying course outcomes is knowledge of results. How will you know what has happened to the students? How will you know they have learned? In our previous examples, we said the students would know the Bill of Rights, understand the differences between democracy and authoritarianism, and appreciate democratic processes. One can not simply assume that, as a result of their attending the course, the students gained this knowledge, understanding, and appreciation. The instructor must attempt to gather evidence of learning achieved.

The second step in specifying objectives, then, is determination of attainment–demonstration that the desired change has taken place.

Perhaps the most common method of determining student change in a college course is the written examination. If the instructor chooses to use this method, which of these statements would best be incorporated in his objective?

☐ 1 The student will show that he knows the Bill of Rights.

☐ 2 The student will give evidence of his knowledge of the Bill of Rights.

☐ 3 The student will respond to test items on the Bill of Rights.

The correct response is number [3]. It specifies test performance—one tangible form of evidence.

It is desirable to specify also the *type* of test to be administered, for there are many forms of written examinations, each of which may demand separate skills.

Pick from this list the response that best states the objective.

☐ [1] The student will demonstrate his knowledge of the Bill of Rights by responding to test items.

☐ [2] Given 10 multiple-choice questions, asking rights guaranteed in the Bill of Rights, the student will select the correct responses.

☐ [3] The student will write an examination on the Bill of Rights.

The correct response is number [2]. Answers [1] and [3] also specify examination performance. However, they do not state the type of exam or the number of items necessary for the student to show that he knows the provisions of the Bill of Rights.

Moving to our second earlier example, how can we tell when the student "understands the difference between democracy and authoritarianism?" The instructor might ask that an essay demonstrating that understanding be written. Which of these statements would then best be incorporated in the objective?

☐ [1] The student will write a 500-1000 word essay comparing and contrasting democracy and authoritarianism.

☐ [2] The student will write a 500-1000 word essay on democracy and authoritarianism in which he includes the following points:

a) definition of terms;

b) three examples of each type of behavior.

The correct response is number [2] . It is not enough to specify an essay in which the student "compares and contrasts." Comparing and contrasting are general terms that mean many things to many people. The objective should include approximate length of the paper expected and directions regarding points to be included.

Note that precise specification of expected student action also lends precision to the instructor's examination items.

Another type of test might be specified—one in which the student demonstrates his understanding of the differences between democracy and authoritarianism and the instructor is spared the chore of reading a mass of papers. In such an exam, the student is asked to identify, from given statements of political events, those indicating democratic and those suggesting authoritarian behavior.

In which of these ways would the object then be stated?

☐ [1] Given 10 paragraphs descriptive of political events, the student will differentiate among them by marking those which typify democratic and those which indicate authoritarian behavior.

☐ [2] On a multiple choice examination of 10 items dealing with democratic and authoritarian behavior, the student will select the correct answers.

The better answer is number [1], for there is little ambiguity as to the nature of the test and the type of thinking which the student must apply to the problem.

But in our third example, we set an *attitudinal* objective– "The student will appreciate the American democratic process." How do we determine the extent to which the student *appreciates* democracy? How write a test to measure an attitude?

Knowledge, understanding, *and* appreciation can all be assessed by observing student actions or products of those actions. If we cannot measure student achievement in classroom exams, perhaps our students' appreciation of democracy can be determined by *out*-of-class behavior.

Suppose the instructor decided that students' appreciation of democracy could be assessed by determining whether or not the students voted when they became eligible, he could then set out to gather evidence of their independent actions. How would such an objective be stated?

☐ [1] Eligible students will vote.

☐ [2] Eligible students will vote in the next general election.

☐ [3] Eligible students will vote many times during their lifetimes.

The correct response is [2] . Although a *general* aim may be for the student to vote many times during his life, such a statement is itself vague. It is relatively easy for an instructor to determine if his students voted in *one* election. Objectives *must* be written so that their attainment can be assessed.

These are, then, the main principles to be followed in specifying instructional outcomes. Objectives must be stated in terms of student learning and they must be stated in such a way that the instructor may determine whether or not learning has occurred.

Two additional matters must be considered before the task of specifying instructional outcomes is complete. The first concerns the conditions under which the learning is to be demonstrated; the circumstances surrounding the student's performance. Our earlier example had the student moving toward responsible citizenship through knowledge of the Bill of Rights; he was demonstrating this knowledge on an examination. But under what conditions was this examination to be administered? Could the student use reference works? Was it a "take-home" exam?

Pick the statement which restates the objective better.

☐ [1] Given 10 multiple-choice questions dealing with recall of provisions of the Bill of Rights, the student will select the correct responses.

☐ [2] In an open-book examination, the student will select the correct responses on 10 multiple-choice questions dealing with recall of provisions of the Bill of Rights.

Conditions of performance in number [2] indicate that the student will be allowed to use a reference work while answering the questions. Number [2] is a better objective because it communicates more information.

In our second example, we had the student analyzing paragraphs descriptive of political events in order to determine whether they were indicative of democratic or authoritarian behavior.

Which of these statements, added to the objective, specifies the conditions under which the student will respond?

Given 10 paragraphs descriptive of political events, the student will note which indicate democratic and which authoritarian behavior by:

☐ [1] Responding to multiple choice test items.

☐ [2] Answering True-False items with no references at hand.

☐ [3] Marking on an answer sheet with a pencil.

The best response is [2]. It indicates the exact conditions under which the learning is to be demonstrated–True-False items *with no references at hand.*

In our third example, the student was to indicate his appreciation of the democratic process by voting.

Which of these statements, added to the objective, indicates conditions under which the performance is to occur?

Eligible students will vote in the next general election:

☐ [1] If they are registered.

☐ [2] Voluntarily.

☐ [3] For the candidates of their choice.

The best response is [2]. "Voluntarily" suggests that the student has been stimulated to act on his own.

In all cases, objectives must specify the conditions under which the performance will occur. These might be instances of voluntary or mandatory behavior; in-class or out-of-class action; written or verbal performance; whether or not reference works will be permitted, and so forth. A blanket disclaimer such as "Unless otherwise stated, all performance will be under usual examination conditions," may be used in practice to head certain lists of objectives.

One more specification and the objective is complete: The demonstration of learning, the conditions of performance and, last, the criterion or standard. Setting the criterion simply involves a decision as to the degree of accuracy which the instructor considers adequate for the achievement of the particular objective. The standard might range from 100%, on objectives which are themselves prerequisite to later objectives, down to a much lower level for complex, higher-order behaviors.

## SPECIFICATIONS

1) What learning is to be achieved by the student, and how will the learning be demonstrated?

2) Under what conditions is the student to demonstrate his gained ability?

3) What standard is to be considered adequate for achievement of the objective?

Consider these examples, all of which would occur "Under usual written examination conditions." First, at the end of an early unit in a biology course, what should the standard be?

> Given a list of 10 basic terms commonly used in biology, the student will, without references, select the correct definition with

☐ [1] 100%

☐ [2] 50%

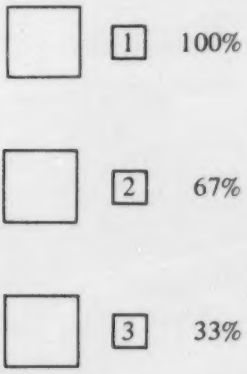
☐ [3] 20%

accuracy from a list provided.

The best answer is [1], 100%. If terms are basic to understanding the course, the student should know all of them before being allowed to continue.

Mark your response for this example.

Verbally, without references, the student will state with




accuracy the three criteria to be followed in writing specific objectives.

The correct response is [1] 100%. An objective that does not indicate the student's performance, the conditions, and the degree of accuracy, is not at all a specific objective.

Other objectives may well require less than 100% performance. For example:

> In an open book examination, the student will write an essay of 500-1000 words in which he selects and explains 4 examples of authoritarian behavior demonstrated by Franklin Delano Roosevelt during his first term. Essay to include definition of authoritarianism, description of events, and rationale for Roosevelt's actions.

For this objective, the instructor may be satisfied that the student understands authoritarian behavior if he can find and explain *three* examples—thus, 75% accuracy would suffice.

Criteria to be included, then, depend on the nature of the task and its position in the sequence of tasks required for completion of the course or curriculum. Objectives requiring abilities prerequisite to the successful fulfillment of *later* objectives would carry higher criterion standards. Terminal tasks often demand less than 100% performance.

Now for the terminal task for this program. Here are the three criteria which must be applied to all specific instructional objectives:

> Provision must be made for the student to demonstrate a particular attitude or ability.
>
> The conditions under which the student's performance is to occur are to be noted.
>
> A criterion or standard of performance must be given.

Eight objectives are stated on the following pages. Each objective may meet one or more of the criteria listed or it may meet none of them. Your task is to determine, for each objective, which criteria it meets and to so indicate by marking the appropriate response.

Here is the first objective:

1) The instructor will analyze the backgrounds of the Civil War in 3 1-hour lectures.

Check the appropriate box or boxes.

☐ [a] The objective includes provision for the student to *demonstrate* a particular attitude or ability.

☐ [b] The *conditions* under which the student's performance is to occur are noted.

☐ [c] A specific *criterion* or standard of performance is given.

Did you find an expressed or implied ability to be gained by the students? No. From all you can tell, the instructor might analyze in an empty room. No ability to be gained is demonstrated; no evidence of learning is gathered. And, of course, no conditions or criteria are listed. None of the criteria for specific instructional objectives was met. A statement like this affords no direction to your students.

Try this one:

2) Given a list of 10 inaugural dates, the student will match them with complete accuracy against a given list of presidents' names.

☐ a The objective includes provision for the student to *demonstrate* a particular attitude or ability.

☐ b The *conditions* under which the student's performance is to occur are noted.

☐ c A specific *criterion* or standard of performance is given.

Is there a specific ability implied? Yes, knowledge sufficient to match certain designed names and dates. How will you know the student has gained this ability? He will match one given list against another. But under what conditions? On a written test? Verbally? In an overnight or open-book assignment? Conditions are not specified.

"Complete Accuracy," however, *is* an acceptable criterion. Thus, you should have checked [a] and [c].

Apply the criteria to this third example:

3) In a 1-hour exam, the student will write satisfactory responses to 4 of 7 essay questions on the Civil War.

☐ [a] The objective includes provision for the student to *demonstrate* a particular attitude or ability.

☐ [b] The *conditions* under which the student's performance is to occur are noted.

☐ [c] A specific *criterion* or standard of performance is given.

What specific ability is implied? Knowledge sufficient to answer questions on the Civil War is quite a vague requirement. The questions might deal with military, political, or social events, domestic or foreign affairs—the possibilities are endless. The first criterion is thus not met. Although the ability to be demonstrated is not specified, other criteria for objectives *are* met. Conditions under which a specified type of exam will be taken are suggested. The standard? Four of seven correct.

The objective meets criteria [b] and [c], but [a], the ability to be demonstrated, is not clearly specified.

4) In the classroom, **the student will thread a #4A surgical suture needle within 10 seconds.**

☐ a The objective includes provision for the student to *demonstrate* a particular attitude or ability.

☐ b The *conditions* under which the student's performance is to occur are noted.

☐ c A specific *criterion* or standard of performance is given.

What is the ability? Threading a surgical needle is indicative of a certain manipulative skill.

Conditions, "in the classroom," and a criterion, "within 10 seconds," are also specified.

This objective satisfies all three criteria.

5) The student will write a 100-200 word paragraph free of gross grammatical errors (run-on sentences, sentence fragments, spelling mistakes) on a subject of his choice.

☐ [a] The objective includes provision for the student to *demonstrate* a particular attitude or ability.

☐ [b] The *conditions* under which the student's performance is to occur are noted.

☐ [c] A specific *criterion* or standard of performance is given.

What is the ability? Writing a paragraph which meets certain specifications. Conditions—none specified. Will the demonstration of gained ability take place in class? Will the student be allowed to use a dictionary? The standard *is* included. "*Free* of gross grammatical errors" is sufficiently specific.

**You should have checked** [a] **and** [c]

6) Of his own volition, the student will purchase several books of contemporary poetry during the 6 months following the course.

☐ a The objective includes provision for the student to *demonstrate* a particular attitude or ability.

☐ b The *conditions* under which the student's performance is to occur are noted.

☐ c A specific *criterion* or standard of performance is given.

What is the ability? No ability is specified, but an attitude is clearly implied. A student who, on his own, purchases books of poetry is giving evidence of some feeling toward the works.

Conditions? Voluntary.

Criterion? "Several" is somewhat vague.

Some limits ("1 to 3"; "5 or more") might have been stated. Although the objective is apparently satisfactory, problems arise when the instructor attempts to measure attainment unless a criterion is spelled out.

You should have checked [a] and [b].

7) Within 2 years after the course, the student will participate in a political campaign by distributing handbills, making phone calls, etc., for a candidate for a period of not less than 40 hours.

☐ [a] The objective includes provision for the student to *demonstrate* a particular attitude or ability.

☐ [b] The *conditions* under which the student's performance is to occur are noted.

☐ [c] A specific *criterion* or standard of performance is given.

Again, we have evidence of an attitude, this one in favor of taking an active part in political processes.

Conditions? Voluntarily, within two years.

Criterion? "For not less than 40 hours."

This objective meets *all* requirements for a specific, measurable course objective.

8) The student will understand and be able to use terms and concepts basic to the study of anthropology.

☐ a The objective includes provision for the student to *demonstrate* a particular attitude or ability.

☐ b The *conditions* under which the student's performance is to occur are noted.

☐ c A specific *criterion* or standard of performance is given.

This is an example of a general unit goal—a lead-in to specific objectives. How will the student show he understands terms? By defining them on an exam? By using them properly in his written papers or in class discussions? Under what conditions? How many terms? With what degree of accuracy?

As stated, the objective meets *none* of the criteria, but *you* can make it meet all of them.

Your final task for this program is to write a specific, measurable objective which stems from the general goal before you. On the following page restate the goal as an objective that meets all three criteria.

Goal: The student will understand and be able to use terms and concepts basic to the study of anthropology.

Objective: _____

_____

_____

_____

_____

_____

_____

You could have written any of several objectives. Here is one example:

> Given any 15 terms from the attached list of 50, the student will write sentences in which he uses the terms correctly in context. In class, no references permitted. Criterion: 80%.

Note there is little ambiguity as to the number of terms the student is expected to know, the conditions under which he will demonstrate his knowledge, or the degree of competency he must exhibit.

Could others, looking at the objective you wrote tell exactly what your instruction seeks to accomplish?

Could you?

# Chapter Four

# Goals and Objectives in Sequence

Within the format described in the preceding chapter, goals and objectives that suggest a variety of student activities may be written. Objectives may specify in-class or out-of-class behavior or tasks prerequisite to other tasks; they may suggest any type of changed attitude or ability, tendency or skill. A few examples of goals and objectives which demonstrate the way they link together are presented in this chapter.

## Goals

In general, college goals are drawn from sources both extra–and intra–institutional. Whether programs come under the heading of liberal or general education, vocational preparation or community service, goals are influenced by governing board policies, social pressures, types of students, administrators' and instructors' orientations, and a host of other factors. Whatever the source of the goals, however, objectives may be derived from them.

"The student will be able to communicate effectively in writing." That goal, or one similar to it, stems from a commitment to general education; it is broad enough to be found in most college statements of direction. But objectives must be built, for several institutional needs are not served by the goal statement alone. Attempts, for example, to evaluate the college's success in effecting the designated ability in its students could not be undertaken on the basis of the goal as stated. Construction of curriculum might take any direction, for interpretations of "effective communication" vary widely. And instructional procedures could not be established with any assurance of direct relevance. The specification of objectives is prerequisite to all those undertakings.

## Terminal Objectives

An objective must meet three criteria: It must specify a student action or product of such action; it must state the conditions under which the performance will occur; and it must establish a minimum performance criterion, a standard. There are many forms of writing that could be interpreted as "effective communication." For instance, if the student produces a coherent composition, he is giving evidence of his ability to communicate effectively in writing. To meet the first criterion for the objective, then, we need to specify the type and approximate length of the composition and certain other pertinent facts:

> The student will write a descriptive essay of 500-1000 words on a topic to be assigned.

That is the task performance by means of which the student shows he can communicate. Several other student actions may be derived from the same goal, for example:

> The student will write a 300-500-word set of specifications for construction of a model airplane.

> The student will write a 75-125-word description of one of 20 plants which may be found on campus.

In each of these examples, the action to be taken by the student is specified. In each case, the student is giving evidence that he can communicate effectively in writing and, in each case, the nature of the communication is specified in advance.

The second criterion is a statement of the conditions and circumstances of the action. Do we want our student to gain ability to write his paper in class in a specified period of time? Do we want him limited to the use of certain reference materials? Conditions may be stated thus:

> Essay will be written in 2 hours under examination conditions; dictionary may be used.

> Description will be written as an overnight assignment.

> Student will be allowed 3 days and all library resources to write the paper.

> Essay will be written in 50 minutes with no aids and no rewrites permitted.

We have established the circumstances under which the action will take place.

Having set the task and the conditions, only the minimum acceptable standard remains to be specified. We may want to allow a few errors:

> No gross grammatical errors (sentence fragments, run-ons); not more than 2 errors in spelling and 3 in punctuation.

We may want the student to communicate effectively regardless of his grammar:

> Description will enable the instructor to identify each of the plants from a set of 20 pictures.

We may require that the essay be mechanically near perfect.

> No gross grammatical errors (sentence fragements, run-ons); no errors in spelling or in punctuation.

Setting the standard or criterion depends on many factors—the importance of the task, the previous abilities of the students, the time available for instruction, and so on. The point is that some minimum standard must be included in each objective.

Put all together, here is an objective as it might be stated in practice:

> In a 2-hour examination, the student will write a 500-1000-word descriptive essay on a topic to be assigned. No gross grammatical errors and a maximum of 2 errors in spelling and 3 in punctuation will be allowed. Dictionary may be used.

Note that there remains little ambiguity as to the nature of the task by means of which the student demonstrates his ability to communicate. Here are others:

> Given 3 days and the resources of the library, the student will write a 300-500-word set of specifications for construction of a model airplane. Specifications will be such that any woodworking student would be able to build and fly the plane.

> Given 20 pictures of plants, the student will write a 75-125-word description of one of them so that the instructor may identify the plant. Paper may include no gross grammatical or spelling errors. Dictionary will be allowed. Time: 30 minutes.

Note that in all these tasks terminal to a particular instructional sequence, the student is acting under a definite set of conditions when he demonstrates his ability to communicate. We

are not speculating on whether or not or how well he can do it. His abilities to organize his thoughts, to handle language, to use rules of grammar, to spell, and so forth, are demonstrated in the task that he has performed.

### Interim Objectives

After the terminal task has been specified, interim objectives may be built. What are the several abilities prerequisite to the student's writing a composition? One can think of dozens and each can be defined as a separate task. A set of interim tasks or objectives may be plotted so that the student is led to the desired end ability. As in the case of terminal objectives, each must meet three criteria: A task indicative of a gained ability must be specified, conditions under which the performance will occur must be noted, and a minimum achievement standard must be set.

Here are a few examples of objectives designed to demonstrate abilities prerequisite to the task of writing an essay:

1) The goal is that the student recognize appropriate titles:

   Given a 500-word descriptive essay and 8 titles, 2 of which may be considered appropriate to the essay, the student will select 1 of the 2 titles. Time allowed, 8 minutes. No reference work permitted.

2) The student must recognize the flow of ideas:

   Given 6 paragraphs, the student will order them in sequence appropriate to form a coherent composition. Time allowed, 10 minutes. No reference works permitted.

3) Does the student understand paragraph structure?

   Given a paragraph and 6 possible topic sentences, the student will select the sentence which best applies. 5 minutes, no reference works.

   Given 6 sentences, the student will, within 7 minutes, order them in sequence to form a paragraph. No references permitted.

There are, of course, many more, but a critical point in curriculum construction is that each of the prerequisite abilities be itself stated as a specific objective. Only in that manner can checks be applied to the system at every point and the entire sequence of relevant experiences be efficiently directed and appropriately evaluated.

### Beyond the Classroom

One criticism sometimes applied to the process of specifying instructional objectives is that performances which may be tested in the classroom are too limited—that the truly important outcomes of instruction are exhibited in student behaviors beyond college walls. Defining out-of-class actions may be undertaken in terms of specific objectives. Tapping the student's mind directly to determine whether he has gained certain abilities is impossible—we instead arrange for him to perform certain tasks which we agree are indicative of his holding those abilities. A similar process applies to the attitudes which affect his other behaviors. If we accept the premise that the college is charged with affecting attitudes, and once we agree on the nature of those attitudes—two rather significant assumptions—the next task is to determine from the student's actions whether and how his feelings have been affected.

A long-range goal sometimes found in college catalogs is "The student will exercise the privileges and responsibilities of democratic citizenship." Again, it is not the intent here to argue for or against the statement as a definition of purpose; however, it seems sufficiently broad to be generally acceptable. What remains is to translate the goal into operational terms—into one or more specific objectives.

Many behaviors may indicate that students are exercising the responsibilities of citizenship; voting is one. Consider this specific objective:

> The student, if eligible, shall voluntarily register to vote within the 6 months following the course.

We have an action suggesting an attitude, the circumstances—voluntarily, within six months, and a criterion—either he registers

or he doesn't. A specific objective has been derived from a general goal.

Here is another behavior that might stem from a similar attitude toward democratic processes:

> Of his own volition, while he is enrolled in the course or within 6 months thereafter, the student will write a letter to a public official in which he states his position on a matter of community concern.

The student is acting in a particular manner, the conditions ("of his own volition") are indicated, and a criterion (either he writes it or he does not) is suggested. Ambiguity as to whether or not the student has gained the desired attitude has been reduced. His actions suggest his attitudes.

The issue of acquired tastes also arises in discussions of curriculum and course organization. The instructor may want his students to gain appreciation for forms of art other than those commonly presented in the popular media. Consider these objectives:

> Of his own volition, the student will attend at least 2 legitimate stage productions during the next year.

> Without its being noted as a course requirement, the student shall participate in a poetry reading or drama group prior to the end of the term.

> Although poetry is not "covered" in the course, the student shall read at least 5 poems by contemporary Americans within 6 months after the end of the term. Conditions: voluntary.

The behaviors, the conditions, and the criteria are all specified.

These and similar objectives may be built for particular courses or they may be part of a departmental charge. In all cases, however, the first consideration is to determine what observable student actions we will accept as being indicative of certain attitudes. We may then set out to plan interim objectives designed to lead the student in the desired direction. It may not always be feasible or expedient for an individual instructor to collect data on

the achievement of out-of-class objectives. Nevertheless, they should be deliberately constructed, for they serve as excellent guiding principles for curriculum development.

# Chapter Five

# Implications of the Process

Many questions ranging from requisite pedagogical and administrative adjustments to philosophical and theoretical implications arise whenever instructors consider using specific objectives in their courses. All possible concomitants cannot be stated because the study of social structures or individual human endeavors simply does not offer concepts or methodologies sufficiently comprehensive to encompass every contingency. Nevertheless, some attempt to understand the issues must be made, for specifying objectives is more than a casual exercise. It is a way of conceptualizing institutional purpose—hence, it affects nearly all pre-existing practices and tendencies.

Many educators have discussed the implications of specifying objectives–Burns [7], McNeil [26], Lindvall [21], and Tyler [33], to name just a few. In one paper, Popham [28], who has done much study in the area, lists eleven reasons frequently given "in opposition to objectives." These reasons include such contentions as: Trivial objectives are more likely to be stated than really important outcomes; objectives prevent the instructor from taking advantage of unexpected instructional opportunities; specifying objectives in certain subject areas is more difficult than in others; and measurability implies accountability, hence, instructors might be judged on their ability to cause learning. Popham counters these arguments by pointing out that actual objectives must be brought to light because instructors too frequently conceal their intentions behind vague statements; explicit ends do not necessarily imply specific means; and instructors in all fields judge student work, therefore, they should specify their criteria for so doing. In answer to the question of teacher accountability, he suggests that instructors *should* be assessed on the basis of their students' learning–a concept explored in depth in a monograph by Cohen and Brawer [11].

Other writers have attempted to explain the concept as it relates to different areas. Smith [30] has discussed the process in armed-service education; Mager and Clark [24] in industrial training. Cohen [9;10] relates it to the junior college. However, much of the writing on objectives has been devoted to polemic in favor of, or antagonistic to, the process and many legitimate questions remain. Some of these will be considered here.

## Relevant Questions

1. Who should write objectives for a course?

   It is difficult to conceive of instructors at the college-level accepting objectives written by anyone other than themselves. The present role expectations for the profession suggest the impossibility of this. However, an even more important consideration than the fact that instructors *would* not accept objectives written by others, is the contention that they *should* not. Each teacher must work through the process on his own or in association with his

students and/or colleagues; it has a definite effect on his perception of his own role and on the way he addresses the broader processes of instruction.

2. Should two or more instructors use the same set of objectives?

If both instructors are teaching different sections of the same course, it is desirable—but not essential—that they agree on common objectives. They may do so and still retain their own preferences for particular media. For example, as Diederich [14] has suggested, one instructor of literature might want to "teach the mystery novel as written by Poe"; another might insist that his students "learn to analyze mystery novels by studying Conan Doyle." Yet both might agree on an objective that required the student to analyze a novel by Rex Stout as evidence of his ability to comprehend this form of writing. In each case, the teacher would be "teaching" to his own predilection, but the students in both courses would be learning similar skills and giving evidence of their learning by performing comparable tasks.

3. Must the wording be so strict and according to form?

The important point here is that the precise nature of the task be outlined. However, instructors have been successful with certain deviations from the form described in this book. For example, instead of beginning each objective with the statement, "The student will . . .," some instructors prefer to say, "You will . . ." in order to make their statements more personally directed. Other variations in wording may be tried but, in every case, it is essential that the task, conditions, and criteria be stated or clearly implied in the context.

4. How detailed should objectives be? Should every little step be specified?

The guiding principle here is, "The clearer and more specific the objectives, the less complex an instructional-

learning system needs to be [22]. However, precision need not mean overly-detailed specifications and assessments. An emphasis on minutiae gives rise to criticism that the trees are being focused on at the expense of the forest. *Too* much detail in planning single learning steps results in fixed media that makes revision awkward.

It is probably best to begin with stated end-of-course objectives and then to plan objectives that would come at the end of each unit in the course. Course units might typically be those segments that are tested in weekly or monthly quizzes. More detailed objectives might be built for important prerequisite steps. However, caution should be taken that each interim or subordinate objective fits within the total instructional plan. Appendix C offers one plan for sequencing objectives.

5. Can all possible outcomes be specified?

It is not possible to detail all concomitants of an instructional plan. Even within the same instructional setting, different students learn different things and unanticipated results frequently occur. However, it is desirable to *attempt* to list as many of the likely consequences as possible. There is nothing to lose and much to be gained by so doing.

6. Some tasks are more complex than others, but when objectives follow a common format, it is as though they were all of equal worth. What about this?

The formats for objectives may be similar, but the relative complexity of the tasks involved may be quite different. In some courses, all objectives might be written at the level of simple recall [4] because the nature of the subject matter demands a great deal of knowledge of data. Other instructors may have as their major intent the building of attitudes favorable toward some process or concept; in these cases, "affective" [18] objectives may dominate. Still others might specify single complex tasks and, rather than attempt to break down the tasks into their constituent parts and specify prerequisite abilities, they might dedicate their instructional efforts to criticizing students' attempts to

produce work demonstrating their overall ability. Much depends on the subject area, the "level" of the course, and the instructor's predilections. And instructional time alloted to different objectives may vary.

7. How often should objectives be revised?

The process of specifying objectives is just that—a process. Objectives should be revised whenever course emphases change, new knowledge appears evident, entering abilities and attitudes of the students shift, new media become available, and so on. The setting of objectives is a dynamic, continuing process, not a one-time event. Revisions every term are not too frequent.

8. What abilities must students possess at the time they enter a course for which objectives have been previously specified?

As a concomitant to specifying objectives that are to be attained by the *end* of a course or program, the instructor should also specify those competencies the student must manifest upon *entrance*. These, too, can be written as precise abilities. In the case of courses or course units that follow in sequence, the objectives that stand at the head of prerequisite units might serve as minimum expectancies for students entering the units that follow.

9. Should the students be told in advance what the course objectives are?

Except in the cases where objectives specify "voluntary" performance, objectives should definitely be communicated to the students. The exception results from the obvious consideration that the instructor cannot be sure his students have acted voluntarily if he has told them of his expectations—their school background and the "student" role they typically adopt suggests they will be stimulated to report certain attitudes and behaviors they may not, in fact, hold. But all "cognitive" and "mandatory" objectives should be revealed.

Communicating objectives can have the effect of removing the veil of secrecy that too often surrounds instructors' expectations. It can also serve as an aid to learning because when students know exactly what is expected of them they can focus their attention on relevant aspects of the instructional media (readings, lectures, etc.).

To be sure that the students understand the objectives and thus realize the full benefits to be derived from advance specification and communication, the instructor should assess their comprehension at the time he distributes the objectives. This can be done rather quickly by means of a procedure such as that noted in Appendix A.

10. Should all students be required to work toward the *same* objectives?

It is frequently possible to specify objectives at comparable levels of performance, but requiring different tasks. For example, a course outline might include the statement, "All objectives at the level of recall must be attained by all students. However, students may elect to submit evidence of their achievement of any 3 objectives from the group labeled 'Analysis.' " Thus, the instructor could offer alternatives, taking care all the while that the options require the same degree of complexity of thought.

Another possibility is to begin with a goal such as, "The student will learn to appreciate music" and to specify an objective that allows for alternative performance. For example, "Prior to the end of the course the student will, of his own volition, attend a concert, begin to take lessons on a musical instrument, read a biography of one of the great composers, *or give similar evidence of his becoming more appreciative of music.*" In this case, the instructor is writing himself in as the judge of what alternative evidence he will accept.

11. Should each student in a course be expected to achieve *all* objectives?

The answer to this question depends on answers to a number of other questions. How important is each objective? That is, would failure to attain one objective prejudice the student's chances of attaining the next? If so, then each student must demonstrate achievement on each objective in sequence. This would be particularly important in courses where a student would be fairly lost unless he followed the group each step of the way.

Is the time fixed for completion of the course? If the student may take as much time as necessary to fulfill the course objectives, then he may reasonably be expected to reach all of them [3].

If the instructor plots objectives in hierarchies that demand different complexities of thinking, he may subdivide his expectations accordingly. For example, he might anticipate that 90 per cent of his class would attain all objectives that demanded "recall of data," whereas he might expect half his class or less to attain the objectives that require complex analyses. In practice, this might suggest individualized sets of objectives. For details, see Appendix D.

12. All learners do not learn in the same way. Even if each student is expected to demonstrate certain complex abilities, why should each be required to go through the same instructional sequence?

If the course is designed to lead to productions that evince particular complex skills, students can be released from patterned sequences at any time that they submit the required composition or product. Let's suggest a variable calendar with students entering and leaving instructional sequences or courses at different times. Some students probably need the step-by-step instruction leading to the complex skill; others may grasp the requisite knowledge all at once. The instructor's task is to ensure that the students learn. Within the limits of feasibility, he should select as many different media forms and task sequences as required for this learning to occur.

13. In addition to planning instruction and communicating expectations to students, what other uses might be made of objectives?

Sets of objectives have many obvious uses. To name a few: To counsel students into programs ("Do you want to be able to do *this*?"); to publicize courses or programs by distributing the objectives to prospective applicants; to allocate resources rationally by asking questions such as "What types of learning would be enhanced if we purchased certain pieces of equipment?"; to assess relative standards between courses; in short, to communicate much information about courses and programs—always within the context of deliberate student expectations.

14. What about grades? Why not write a task to be performed under a certain set of conditions but allow for variation in criterion performance?

When an instructor fails to set minimum expectations, he in effect anticipates that students will distribute themselves along a curve of normal probabilities regarding the degrees of competency they manifest. Each student is thrown into competition with all others as though they were contending for a finite amount of knowledge, as though there were just so much knowledge to go around. Grade marking is a people-sorting system; specifying objectives is an instructional process. If the criterion or standard of performance is flexible within an objective, the objective's power as a force for learning is reduced.

15. Some students simply will not or cannot learn certain concepts. How can an instructor commit himself to student achievement in advance of the course?

In practice, the instructor need not make a firm commitment prior to his initial class meeting. He can assess the group early and then set the criteria of expected performance regarding how many and which objectives the class will achieve and the numbers of students who will achieve them. At that point, he must not only communicate his

anticipations to his class, he must believe them himself. Setting complete sets of specific objectives in this fashion may be the single most significant thing an instructor can do to effect learning.

This last point deserves some elaboration. When an instructor builds a course and plans assignments, he makes many assumptions. He assumes that the students already have a certain-level reading ability, time to study, motivation to learn, and particular powers of reasoning. He further assumes that his students will tend to remain seated for fifty minutes, will listen, and will keep their minds from wandering excessively. Frequently, he even assumes that they will be as interested in what he has to say as he is, himself.

Why not make one more assumption then? Assume that a specified per cent of the class will achieve certain objectives. Base the assumption on knowledge of typical student populations, entrance test scores, or the way the class "feels" the first day. Use as further input to the assumption the per cent of previous classes that achieved similar objectives in the past. Then set a target regarding the number of students who will achieve the objectives (see Appendix B).

Some evidence is accumulating which indicates that students actually learn more when instructors expect learning from them [29]. If this is so, then an advance commitment to specified per cents of the class attaining certain objectives becomes an integral part of the teaching process.

## Further Effects

The definition and use of specific objectives has many concomitants. In addition to those already mentioned, there are broader implications which warrant consideration:

A continuing dialog on institutional goals and purposes might well ensue—one that would be based on actual outcomes.

Gaps and overlappings in the curriculum may be identified and reduced. Is the college committing too much time and resources to certain goals, not enough to others?

Organizational patterns and physical plant arrangements may be planned in terms of what is actually happening to the students. Resources may be rationally applied.

Methods and media may be selected and used according to their demonstrated value. A whole basis for experimentation is established.

The stage is set for a "Pass Only" marking system; grade marking as a student-sorting device may disappear.

Test construction and scoring can shift from a normative base to a criterion-referenced system.

Although the implications could be extended, this list serves to reveal the magnitude of the process and its potential effects. Writing the objectives should not be taken lightly. Rather, the practice should be examined in terms of the influence it can have on an institution's—or an individual instructor's—every activity.

# Chapter Six

# Criticisms and Caveats

All is not one-sided. The process of specifying objectives has its shortcomings, and certain criticisms are valid. However, in assessing objections, it is important to separate the legitimate contentions from those that are offered as unwarranted excuses for maintaining an institutional or individual status quo.

Most of the objections usually raised can be understood in view of the present college context. The preparation of sets of objectives requires much effort on the part of instructors who work in institutions that do not typically reward this behavior. Currently, most college instructors are employed, retained, and

supported on bases other than their demonstrated ability to define and to cause learning. The responsibilities of their positions involve them in a host of tasks only peripherally related—or frequently totally unrelated—to instruction. Moreover, few instructors choose to enter the profession for the express purpose of "causing learning." Their perceptions of "teaching" and the "teacher's role" are at variance with the definitions and philosophical stance on which the process of specifying objectives is founded. Objections to specified learning on these bases cannot readily be countered except by appealing to the instructors' sense of professionalism. Nevertheless, certain valid criticisms may be raised and some of them will be considered in this chapter.

One reasonable objection relates to the matter of outcomes that cannot be specified either because they are unanticipated or because they defy measurement. Another is that it is not possible to establish causal relations between student learning and the institutional or instructional environment. Both these objections may be countered, yet not completely overcome.

Every program has unanticipated outcomes. Every course leads to changes in student attitudes or behaviors that are not measurable. This may be granted. However, objectives are targets, places where evaluation can begin. They should not be construed as exclusive ends, and assessment of institutional impact need not be confined solely to measuring attainment of pre-set objectives. Further, the practice of defining outcomes usually leads to the selection and use of better measurement devices. Even so, much, perhaps most, of the learning that occurs in any course is either unanticipated or unmeasured—or both.

The question of causal relationships between teaching and learning can be countered only by acknowledging the existence of doubt. Establishing the relationships between any act and any consequence is at best a tenuous undertaking. The objectives are the assumed ends of the instructional effort. Perhaps the students would have learned what they did even if there had been no "teaching." Perhaps not. We can never know for certain. Nevertheless, although people may learn whether or not they are taught, instruction—by definition a purposeful endeavor—must be designed to lead somewhere. And objectives are unparalleled tools for planning instruction.

Although these are reasonable criticisms of objectives as statements of manifest behavior, they do not speak to the other functions of objectives. In addition to their obvious uses, objectives serve also as liberating forces, mitigating the untoward effects of required courses, grades, mandated attendance, and professors who, consciously or otherwise, attempt to mystify or confuse students. Their broader purposes seem effectively to contravene the objections based on the unmeasurable outcomes and the unprovable cause-effect relationships.

One tenable criticism of the process is that educational institutions should be dedicated to enhancing the individuation process. In this case, instructors may genuinely desire to enhance student learning, but they may see learning as an input to student self-actualization. Accordingly, they may wish to skirt the process of goal-setting and attempt to work directly with the student as a way of aiding his personal growth.

Instructors who adhere to this position believe that it is never possible for anyone to select objectives for anyone else; on the contrary, each person must be provided with some form of climate or environment that allows him to select experiences pertinent to his own development. All education is process, never goal. Further, this argument contends that all learning is self-directed, that the individual is a creative, dynamic being generating his own growth. No one can teach anything to anyone. Change must be internally generated.

Change extrinsically induced versus development intrinsically originated; goal versus process—these are valid concerns. In effect, they seem to deny all curriculum and instruction. And objectives do suggest curriculum and instructional sequences. Can these apparent polar positions be reconciled?

One answer might be to assume it necessary for people to learn to use tools—language, poetic forms, the ability to think critically—and to know how to apply these tools to a variety of problem-solving situations. Failing to gain the use of these "tools of the race" may well retard individual development. If this is so, the defined outcomes approach may be seen as a releasing agent stimulating certain forms of learning which, in turn, enhance the developmental process.

Objectives, the ends of instruction, thus become means; the apparent product becomes part of the process. When objectives are seen only as statements of outcomes, the criticism outlined here seems to reject their use. When they are perceived as inputs to learning, the objectives become integral agents of the developmental process.

Another tenable criticism relates to both institutional and individual functioning. Ambiguous goals and aims have great defensive value. It is impossible for a critic to snipe at a college course or program with any great degree of accuracy if he does not know what the curriculum is designed to accomplish. If we say "students will learn to communicate effectively, to think critically, and to appreciate democracy," but stop short of translating those goals into specific objectives, who can argue that the students do not so communicate, think, and appreciate? The accusation that they have not reached those cognitive and affective states of mind is easily rebutted if for no other reason than that the charge must be based on terms and data capable of widely varying interpretation.

A corollary to be considered here is that once outcomes *are* specified, the instructor must stand ready to defend each of them. Nebulous concepts are great for public relations. Anyone who challenges the individual's statement that he intends to lead his students to "exercise the privileges and responsibilities of democratic citizenship" is attacking *Flag Day* and the *Fourth of July*. But translate that exercise into particular habits of voting, campaigning and becoming involved in public issues, and someone in the college or in its supporting community will not approve. Once communicated, specific objectives will be questioned, and the more successful the instructor is in bringing his students to the abilities and tendencies to perform designated tasks, the more intense the questioning will become. Paradoxically, ambiguity, inefficiency, and instructional procedures of unknown effect are, in this case, sturdy defenses.

Other matters concern the instructor more personally. As long as he fails to define his objectives in precise terms, he does not have to face up to his own motives. He can always delude himself as to his real worth as a teacher by saying, "I put a vision of truth and beauty before my students. I am truly sorry most of

them could not grasp it, but that's the way it goes." When he writes objectives and makes advance commitment to student learning, he is forced to spell it all out, to acknowledge his actual intentions. Does he want to teach or to sort? . . . to enhance or to deny? For many people this form of introspection is not easy; for some, it may be impossible.

There are other matters of particular import to the institution as a whole. Once objectives are spelled out in specific, measurable terms, instructional methods become considerably more efficient. Having gone through the deliberate process of constructing the objectives, instructors become intensely aware of what they are trying to do and seek more appropriate ways of doing it. They may desire to prepare reproducible media so that when they find effective means of meeting their objectives, they can use the materials again. Their requests for mechanical equipment must be weighed on the basis of demonstrable value. One or more measurement specialists have to be assigned to help them gather evidence of student achievement. The work of the college research director gains new dimension, for it involves him in student followups, item analyses, and a host of activities that directly aid the instructional staff. These represent adjustments which must be made within the framework of existing educational structures as instructors, working individually and in association with their fellows, proceed to define outcomes.

These are some of the considerations that arise once objectives are defined. Specifying objectives means examining student change rather than teacher performance. It means sharpening our views of students—looking past their implied abilities to their specific actions, beyond their unknown attitudes to their observed behaviors. It is itself a major part of the instructional process and, in the context of today's colleges, its benefits far outweigh its drawbacks.

# Chapter Seven

# Specimen Objectives

This chapter includes more than 100 specimen objectives, most of which were culled from course outlines prepared by people teaching—or preparing to teach—in junior and senior colleges. Many of these outlines, each including large numbers of additional objectives, are available from the ERIC (Educational Resources Information Center) Document Reproduction Service. A listing of the courses they cover and details on how they may be obtained is provided in Appendix E.

The objectives reproduced here are not meant to serve as complete sets or sequences to be adopted by college instructors.

They are specimens only, listed to depict certain classification schemes and to portray some of the variety of objectives possible within a consistent format. As you read through them, note particularly the levels of complexity of thought or attitude which the student must manifest if he is to attain the objectives satisfactorily. Although some empirical work on validating various hierarchical schemes has been done [19], for most instructors' purposes, the classifications can best be viewed as logical orderings only. Try not to be influenced by the subject areas for which the objectives were written originally. Frequently, objectives prepared by instructors teaching courses in academic disciplines other than your own may well be adopted to fit your own courses and your own purposes.

One more caution—don't get snarled in the language. For example,

> Without aids or references, given any quadratic equation, the student will derive the correct solution.

Some instructors might quarrel with the word, "derive," preferring to substitute "work out" or "solve for." However, the terms used matter little unless the intent is changed. If the student knows what he is expected to be able to do at the end of a given unit, the objective has served its purpose.

## SECTION A: SINGLE TASK VS. PRINCIPLE DEMONSTRATION

Can students memorize the responses to tasks called for in the objectives and avoid learning the principles? As Thorndike [31] put it, "The crucial indicator of a student's understanding of a concept, a principle, or a procedure is that he is able to apply it in circumstances that are different from those under which it was taught."

This group of objectives illustrates the difference between specifying objectives that call for single tasks and those that demand knowledge of the principles underlying the tasks. In the first example in each pair, the student may answer satisfactorily by memorizing the correct responses; in the second, he must demonstrate that he knows the rules governing the situation.

**From a Course in French**

*Goal:* The student will be able to conjugate French verbs.

Single task: Given the verb "parler," the student will conjugate it in writing in the present, imperfect, and future tenses, with 90% accuracy in class.

Principle demonstration: Given *any* regular "er" verb, the student will conjugate it in writing in the present, imperfect, and future tenses, with 90% accuracy in class.

**From a Course in English**

*Goal:* The student will be able to apply the principles governing topic sentences.

Single task: Given the topic sentence, "It was a dark and stormy night," he will write a relevant paragraph.

Principle demonstration: Given *any* topic sentence, he will write a relevant paragraph.

**From a Course in Zoology**

*Goal:* The student will understand the physiology of cells.

Single task: In class, given a diagram, the student will label the parts of a unicellular amoeba and a lettuce cell, without aids and with 100% accuracy.

Principle demonstration: Given a photograph of *any* cell in class, the student will note whether it is an animal or plant cell, and will name its parts—without aids and with 90% accuracy.

**From any Course in Which the Scientific Approach Is Taught**

*Goal:* The student will understand the relationships among, and the appropriate uses of, elements in a scientific approach to problem solving.

Single task: In class, given the (1) data, (2) analytical procedures, (3) conclusion, and (4) hypothesis for a specific problem, the student will select the appropriate statistic out of 5 alternatives.

Principle demonstration: In class, the student will select the appropriate 5th element for a specific problem, given *any* 4 of the following elements of that problem: (1) data, (2) analytical procedures, (3) conclusion, (4) hypothesis, and (5) appropriate statistic.

**From a Course in English**

*Goal:* The student will be able to define and organize structural and mechanical elements of English sentences.

Single task: In class, the student will underline the verb or predicate in each of 10 sentences given in his workbook, with 100% accuracy.

Principle demonstration: In class, the student will be able to pick out and underline the verb or predicate in *any* given English sentence, with 100% accuracy.

**From a Course in Speech**

*Goal:* The student will understand the elements of public speeches.

Single task: In class, the student will complete a 25-item true-false quiz that consists of evaluation of a certain guest speaker. This quiz will include questions on the organization and content of his speech, including internal consistency, contents, and empirical evidence; the speaker's voice, articulation, and platform mannerisms; and his use of audience feedback to adjust the quality of his speech.

Principle demonstration: When called on after the speech of *any* class member, the student will give a verbal analysis and a critique of the speaker, including comments on speech content and organization; and the speaker's delivery and gestures.

**From a Course in Business Administration**

*Goal:* The student will examine the ethical conduct of American business.

Single task: In class, each student will write a 150-250-word paragraph identifying at least 3 ethical violations mentioned in the article, "The Electrical Industry Price Conspiracy."

Principle demonstration: Outside of class, the student will refer to the *Business Index of Periodicals* in the Library and will find 2 examples of business ethics in articles in current business magazines such as *Fortune, Forbes,* or *Time.* He will write a 150-250-word paragraph comparing the 2 situations and the ethical values involved.

## SECTION B: VARIETY IN TASK

Do all the objectives call for the same type of responses? Task variety may be built into a course by using objectives that demand different kinds of performance. These may stem from the same general goal but they allow the student to demonstrate his capability in a variety of situations.

### From a Course in Chemistry

*Goal:* The student will understand the process of electroplating.

1. Outside of class, the student will draw a diagram to illustrate a simple electroplating apparatus and how it works. He will label the components, including the solution, chemical compound, and direction of the electric current—with 100% accuracy.
2. In class, the student will write a description of the process of electroplating and explain how it works. He will give 1 example. This will be in 50 words or less and will take 15 minutes.
3. When called on in class, the student will explain the process of electroplating. He will tell how to set up equipment for the process and how it works, with no more than 1 error of procedure or omission in the explanation.
4. In class, given the necessary materials, the student will demonstrate the process of electroplating by assembling the materials and plating 1 piece of metal, explaining each step, with no more than one error in procedure or fact—1 hour.

Each of the four objectives above is a different way of demonstrating understanding. Note that in Objective Four the student has moved beyond pen and paper description and is demonstrating a manipulative skill.

**From a Course in English**

*Goal:* The student will understand the use of affective language and rhetorical devices in written communication.

1. In class, given a list of 10 terms basic to the study of affective communication, the student will define 6 of them.
2. The student will participate in a class discussion in which the affective language in a given essay is analyzed. The discussion will include the types, intent, and appropriateness of the affective language used.
3. Outside of class, the student will write a 400-600-word paper in which he analyzes the use of affective language and rhetorical devices in an advertisement he has selected from a newspaper or magazine. The essay will discuss the advertisement's use of connotation, figurative language, direct address, inference, and poetic devices.
4. Outside of class, the student will write a 500-700-word persuasive essay. He will employ affective language and rhetorical devices to sway the reader to his point of view. The argument will be emotional rather than rational.

**From a Course in Business Administration**

*Goal:* The student will examine the ethical conduct of American business.

1. Outside of class, the student will devise a 5-to 10-item questionnaire dealing with a business code of ethics. He will mail these questionnaires to at least 5 local businessmen and will include self-addressed, stamped envelopes for return of the questionnaires. The results will be snared with the class during future seminar sessions.

2. In class, 3 students will represent employer, employee, and customer in a 10-minute role-playing exercise dealing with fraudulent advertising in a business. They will define the parameters of the situation.
3. In class, the student will assign to each of 10 given statements 1 of the following terms: business ethics, ethics and the law, professional standards in business, and conflicts of interest; 70% accuracy.
4. Outside of class, the student will write a 150-500-word paragraph describing what his own operating code of business ethics would be if he were the owner or manager of a business. His paper will include statements about the following: responsibility to the public; responsibility to the business profession; responsibility to the stockholder (if applicable); statement of his own personal values, beliefs, principles, etc.

**From a Course in English**

*Goal:* The student will be able to write appropriate topic sentences for paragraph development of a thesis statement.

1. Given a thesis statement in class, the student will select which of 10 given topic sentences are appropriate to the thesis statement.
2. Given an essay in class, the student will underline the thesis statement and the 3 topic sentences in the 3 paragraphs of the essay.
3. Given a thesis statement in class, the student will write 3 topic sentences for paragraph development of the given statement.
4. Given an essay in class, the student will indicate which topic sentences (and paragraphs) are not appropriate to the thesis statement. He will make brief comments as to why they are not appropriate on the essay's margins.

**From a Course in Health**

*Goal:* The student will understand the various health services, and the methods of financing these, that exist in his community.

1. In class, the student will explain, without any type of assistance, the Blue Cross and Blue Shield health care plans to the other students. His examples will include types of coverage, enrollment procedures, and approximate cost for benefits.
2. The student will visit and will give a brief verbal evaluation of 3 health care centers; included should be at least 1 child or adolescent clinic. His evaluation will include a comparison of the quality of the services.
3. In class, the student will participate in a 15-minute debate on the advantages and disadvantages of compulsory national health insurance. His argument will relate to the effect of compulsory national health insurance in present community health services.
4. The student will spend 1 entire day visiting some institution involved in health care services and will submit a 3-5-page paper that describes how the staff, facilities, procedures, publicity, and charges are appropriate to the institution's clientele.

**From a Course in Art**

*Goal:* The student will understand the 6 principles of design and will use them in unified artistic compositions.

1. The student will draw an example of each of the 6 principles of design, given the necessary materials (pencil and 9 x 12" paper) and the definitions of balance, harmony, variety, movement, proportion, and space—during 1 class session.
2. The student will illustrate each of the 6 principles of design. Using geometric forms cut from construction paper, he will glue them on a 9 x 12" paper that has been divided into 6 spaces—during 1 class period.
3. In class, given 3 examples of each of the 6 principles of design, the student will select the 6 best examples. He will write statements about each, explaining why his choice demonstrates the principle better than the alternative ones, with 67% accuracy.

4. The student will use the 6 principles of design to make a unified arrangement that consists of human figures—these have been cut from magazines; he will also need glue and 6 x 9" paper. Balance, harmony, variety, movement, proportion, and space will be obviously incorporated in the composition—during 1 class session.

Criterion: The instructor will determine when the objective has been reached.

## SECTION C: COGNITIVE CLASSIFICATIONS

Many attempts to order objectives according to the relative complexity of the tasks they demand have been made. The most widely used classification scheme is the one described in Benjamin S. Bloom's *Taxonomy of Educational Objectives– I: The Cognitive Domain* [4]. The following sets of objectives illustrate progressions according to the *Taxonomy*.

### From a Course in Mathematics

*Goal:* The student will understand the concept of the Derivative.

Knowledge: When given 14 terms concerned with the concept of derivatives (derivative, tangent line, differentiation, relative maximum, etc.) and the 14 formulas covered under this concept (power formula, sum formula, chain rule, etc.), the student will define 12 of the 14 terms in as few words as possible and will be able to match the 14 formulas with their names with 100% accuracy.

Comprehension: The student will interpret given conclusions and prepare graphic representations of recorded equations in the following ways: (1) prove 3 out of 4 exercises involving the continuity of a differential function correctly and in as short a method as possible; (2) given a set of exercises involving the power function and the sum formula, he will take these exercises and their given answers and show how this answer was obtained, with 80% accuracy; (3) given a set of

functions, he will show that the graph of each of the functions has a vertical tangent line at the indicated point—with 80% accuracy.

Application: The student will apply principles, formulas, or theorems to new situations by solving given problems involving derivatives, differentiation, increasing and decreasing functions, and extrema, with 75% accuracy on each problem; and he will graph 8 out of 10 functions correctly.

Analysis: Given theorems involving continuity, increasing and decreasing functions, and extrema, and proofs resulting from these, the student will distinguish the facts from the hypotheses; draw conclusions from supporting statements; pick assumptions that justify given conclusions—with 75% accuracy on each item.

Synthesis: Given 4 theorems that he has never seen, the student will formulate a proof for each theorem by drawing on elements from previous sources and he will rate them together to form a pattern proof—with 80% accuracy.

Evaluation: Given theorems and proofs, the student will explain in writing his judgment as to the validity of the proofs and he will support this judgment as well as defend or attack the given proof. He will then determine which of several conclusions is the logical one and will judge the accuracy of the given statements that led him to pick that conclusion, with 75% accuracy.

**From a Course in English**

*Goal:* The student will understand the processes of inductive and deductive reasoning.

Knowledge: Given 6 terms that are basic to the study of inductive and deductive reasoning, the student will define any 4 of them, with 75% accuracy; time 15 minutes.

Comprehension: Given 4 syllogisms, the student will identify the "middle term" of each, with 75% accuracy; time 5 minutes.

Application: The student will listen to several letters read from the editorial page of a newspaper or magazine. He will participate in a discussion about the type of logic employed, the effectiveness of the evidence, and the validity of the argument.

Analysis: Outside of class, the student will write a 200-300-word paper discussing the fallacies and pseudo-logic found in an essay distributed previously in class.

Synthesis: Outside of class, the student will write a 500-700-word essay, presenting an argument for or against capital punishment. Citing evidence from the assigned essays, he will develop his argument inductively.

Evaluation: The student will participate in a class discussion on the validity and effectiveness of the arguments presented in selected student papers on capital punishment. His comments will reveal an ability to evaluate logical arguments.

### From a Course in Art

*Goal:* The student will be able to demonstrate his understanding of color theory.

Knowledge: After viewing an 18-minute film that explains and demonstrates color theory, the student will correctly answer a 5-item multiple-choice quiz on the fundamentals of color theory as identified in the film.

Comprehension: Given the necessary equipment, the student will use the 3 primary colors and black and white to make a color chart, consisting of the 3 primary colors, the 3 secondary colors, a range of 6 values and 3 intensities each.

Application: Given the necessary materials, the student will glue a black and white photo clipping from a magazine onto a 6 x 9" paper. He will extend the black, white, and gray design of the photo to cover the area of the paper with a relevant design—in class.

Analysis: Given the necessary materials, the student will disassemble a colored magazine clipping into its basic color values by tearing it into small pieces and sorting these according to color value. Then he will assemble the pieces in a new arrangement, a design based solely on the color values.

Synthesis: Given the necessary materials, the student will match the colors of a clipping and extend them to cover the entire area of a 6 x 9" paper to which he has glued the clipping–during a 90-minute class.

Evaluation: Given a 6 x 9" white paper, tempera paints and a brush, the student will paint 2 samples of a 2-word message covering the entire paper: 1 using color with a strong and clear impact, and 1 using color ineffectively.

Criterion: The instructor will determine when the objective has been achieved.

**From a Course in Education**

*Goal:* The student will understand the process of specifying objectives.

Knowledge: In class, with no references, the student will list and define, in 10 words or less, the 3 criteria for specific objectives.

Comprehension: Given a list of 10 objectives, the student will distinguish between those which do and those which do not meet the criteria for specific objectives. In class, no references. Not more than 1 error permitted.

Application: When presented with any partial objective in class, the student will state verbally the reasons why it fails to meet the criteria and restate it properly. No errors permitted.

Analysis: Given any goal statement, the student will write a set of objectives that accurately assess whether or not he has attained the goal. Outside of class with 80% accuracy.

Synthesis: The student will prepare a complete set of goals and objectives for a course in his own teaching field. Comprehensiveness, feasibility, and accuracy will be assessed by an experienced instructor in that field.

Evaluation: Outside of class, the student will write a paper of 150-350 words taking a position on the use of objectives in his own teaching. Paper to include at least 3 arguments in favor of, and 3 against the process.

### From a Course in Business

*Goal:* The student will understand the role and the functions of a manager.

Knowledge: The student will define the term *management* in 25 words or less and with 100% accuracy.

Comprehension: Given a random list of the functions of management—planning, organizing, controlling, and directing—the student will define these functions in ranked order, with 100% accuracy.

Application: Given a 250-word description of a management problem, the student will write his own 50-100-word assessment of the cause of the problem, outside of class, with 80% accuracy.

Analysis: Given 10 descriptions of situations, the student will identify in writing which items are conceptual, which are technical, and which require the human skills of the manager, 80% accuracy.

Synthesis: Outside of class, the student will write a 300-400-word essay on management as both an art and a science, including illustrative anecdotal situations.

Evaluation: Given a list of 4 management tools, the student will write a 50-150-word paragraph explaining the management function (planning, organizing, controlling, directing) wherein each tool might be most effectively used with 80% accuracy.

**From a Course in English**

*Goal:* The student will understand the Shakespearean sonnet.

Knowledge: In class, the student will write verbatim Shakespeare's *Sonnet 29*, without aids and with 100% accuracy.

Comprehension: In class, the student will paraphrase *Sonnet 29*, composing a paragraph in concise, modern prose, 150 words or less—without aids.

Application: In class, the student will write an essay of 100-200 words describing a concrete situation which illustrates the emotional dilemma and resolution expressed in *Sonnet 29.*

Analysis: In class, given a list of poetic elements (including rhyme scheme, sonnet form, metric substitutions, figures of speech, and imagery), the student will indicate which ones apply to *Sonnet 29*—without aids and with 90% accuracy.

Synthesis: Outside of class, the student will compose an original sonnet that includes the elements of rhyme scheme, sonnet form, meter, figures of speech, imagery, and point of view.

Evaluation: In 1 class period, given various critical evaluations of *Sonnet 29*, the student will choose the most appropriate criticism and defend it in a 250-350-word essay by explicating illustrative textual quotes supporting its contentions and by briefly explaining his objections to the other critical evaluations.

## SECTION D: AFFECTIVE OBJECTIVES

The students may be able to perform when required to do so, but how do they *really feel* about the subject? Objectives that consider "affect" may be used in certain situations. Attainment may be assessed by such means as questionnaires, journal checking or observations.

### From a Course in Art

*Goal:* The student will value art activities and art experiences and demonstrate his interest in these activities.

1. In class, the student will demonstrate his interest in art activities by listening to project directions, by asking questions when perplexed, by following directions, and by completing each project.
2. The student will demonstrate his interest in pursuing art activities by remaining after class to complete projects and by doing art work outside of class that was not assigned.
3. The student will demonstrate his conscious use of the 6 principles of design in art work which he has completed that was not part of assigned projects. He will question or discuss the use of the 6 principles of design in his and others' art work, during the semester.
4. During the semester and after, the student will demonstrate his internalization of the values of sensitively seeing and responding to his environment and to art work by any of the following activities:
   a) making art products after the semester has ended
   b) attending art exhibits
   c) reading books and articles about art
   d) enrolling in advanced art courses

### From a Course in Business Administration

*Goal:* The student will be aware of the functions of personnel offices in business and will relate this knowledge to his own career plans.

1. In a special 2-hour evening session, the student will listen to a discussion of the personnel functions of the service division presented by an employment manager of a large corporation.
2. The student will voluntarily ask questions about the corporation's hiring practices, salaries, fringe benefits, and other personnel policies.

3. The student will voluntarily take notes when the guest speaker describes the employee qualifications that his corporation desires.
4. When polled verbally, at least 1/3 of the students will ask the instructor to invite guest speakers from the personnel departments of other businesses.
5. In a written assignment that discusses future career plans, at least 2 students will indicate their aspirations toward a career in the field of business personnel.

### From a Course in English

*Goal:* The student will value the sound and rhythm of poetry.

1. The student will listen to a poem and a short prose work read aloud in class. He will listen for the difference in the rhythm and rhyme and will participate in a general discussion afterwards, indicating awareness of the rhythm and rhyme.
2. Following an oral reading of a poem in class, the student will participate in a class discussion of the use of rhythm and rhyme. 60% of the class will participate on a voluntary basis.
3. During the 3-week unit on poetry, the student will voluntarily read a poem outside of class. In a general class discussion, he will indicate his response to the poem.
4. During the term at least 1/4 of the students will voluntarily submit original poems or song lyrics.

### From a Course in Health

*Goal:* The student will acquire personal habits conducive to a state of excellent physical health.

1. The student will indicate in class discussion that he is aware of the fact that cigarette smoking is harmful to health since it is a causal factor in cancer and heart disease.
2. The student will indicate in a daily journal that he sleeps at least 8 hours every night and eats 3 nutritionally balanced meals every day.

3. In his daily journal, the student will indicate that he brushes his teeth after every meal. His consumption entries will include a minimum of confections and sugar-sweetened beverages.
4. The student will include the appointment cards from his twice-yearly dentist check-up and his yearly physical examination. He will also include a document of the results of his yearly chest X-ray.
5. If the student smokes cigarettes, he will stop smoking prior to the end of the term.
6. He will not imbibe enough alcohol to be tested as "under the influence of alcohol," at any time within one year of completing the course.

**From a Course in Literature**

*Goal:* The student will appreciate twentieth-century American literature.

1. Although a poetry unit is not included in the course, student shall voluntarily read at least 3 poems by contemporary American poets before the end of the term.
2. The student shall elect to take a second course in American literature within 1 year after completing this course.
3. The student shall voluntarily read an average of 3 contemporary American novels per year over the next 4-year period.

## SECTION E: UNCLASSIFIED OBJECTIVES

The following miscellaneous objectives may be useful in illustrating some tasks or situations not outlined in the previous sets.

**From a Course in Written Composition**

*Goal:* The student will know the meanings of some of the terms used to describe writing.

1. Given a list of terms used to describe writing and a list of their definitions, the student will match correctly each term with its definition. 70% accuracy. No references.
2. Given a list of rhetorical devices and a series of sentences illustrating them, the student will match correctly each device with its example. 70% accuracy. No references.

*Goal:* The student will understand different types of sentences.

1. Given any 10 simple sentences, the student will expand them into more complex statements by adding details. 70% accuracy. Dictionary may be used.
2. Given 10 sentences describing specific events, the student will write statements expressing generalizations derived from the events. 50% accuracy. Any reference may be used.

*Goal:* The student will write 2 papers, 1 illustrating "meaning," the other, "feeling."

1. Given an abstract word or concept, the student will write an essay explaining its meaning in 2 or more historical contexts. Essay to include the circumstances of the use of the word, the manner of its use, the intent of the use and the effects of its use. Out of class; 250-700 words.
2. The student will write a description of an emotion he has felt. Description to include situation in which the emotion was aroused, contributing and immediate causes, and the physical manifestations of the emotion. Out of class; 150-400 words.

*Goal:* The student will recognize the poetry in the lyrics of popular music.

Outside of class, the student will write a 500-800-word essay in which he compares the general poetic qualities of 2 popular songs. His essay will indicate which song has more effective poetry and the reasons for his choice.

**From a Course in Architectural Drafting**

*Goal:* The student will be able to use materials basic to mylar film rendering.

1. On vellum paper, he will use 1/16" zip-a-line tape to delineate the walls of a given house plan. No gross errors in size of dwelling and no errors in intersections of walls and corners permitted.
2. Using press-on letters, he will label each area of a given dwelling. No errors in spelling or in application of letters permitted.

**From a Course in Materials of Engineering**

*Goal:* The student will know certain properties of ferrous metals.

1. He will list 8 (of the 16) microstructural constituents of ferrous metals. No references, 10 minutes.
2. Given a list of 5 microstructural constituents of ferrous metals, he will write a 10-50-word description of each of those constituents to be found in a given annealed steel. 15 minutes, no references.

**From a Course in Biology**

*Goal:* The student will understand fundamentals of respiration.

1. Given the respiratory rate for a certain animal under optimal conditions, he will write the temperature under which that rate is most likely to occur. No references, criterion $\pm .3^{\circ}$.
2. Given a list of plant parts, he will select the part where photosynthesis occurs at the greatest rate. 2 minutes, no references.
3. Given a list of chemical compounds, he will select 1 that is found at each step in the process of respiration and 1 that is

found at each step in the process of photosynthesis. 5 minutes, no references, 80% criterion.

### From a Course in Elementary Statistics

*Goal:* The student will understand the usage of some terms basic to the study of Statistics.

1. Given a list of 10 terms, he will match 9 of them with the correct definitions. 10 minutes, no references.
2. Given 20 different groups of data, he will note for each whether they are continuous or discrete. 10 minutes, no references, 80% criterion.
3. Given 20 different numbers, he will write for each the number of significant figures in it. 7 minutes, no references, 90% criterion.

### From a Course in Speech

*Goal:* The student will understand the process of small group discussion in solving problems.

1. In class, when directed to do so, students will form into groups for the purpose of having small-group problem-solving exercises.
2. Given a leadership checklist containing 25 qualities of dynamic leadership, the students will complete the list, marking each quality with a "yes" or "no." The person with the least number of "no" answers will assume leadership of the small-group discussion.
3. Each discussion group will select a current problem that is pertinent to a controversial issue in the community or on campus. After 6 class meetings, each group will arrive at a high-quality solution to the problem, based on research, analysis, and logic.
4. Using the research, group discussion, analysis, and problem-solving techniques, each group will present its solution to the controversial problem to the rest of the class. Small-group-discussion techniques will be used, and

the students will demonstrate their understanding of the issues involved, the serious implications of the problem, and the necessity for its solution.

5. As a voluntary extension beyond the small-group-discussion unit, the students will attempt to put the group's assessment of the problem and the solution into action—by such activities as circulating petitions, making speeches, writing letters to public officials, etc.

### From a Course in Written Composition

When it is possible to avoid tieing the objectives and the textbook together it is better to avoid doing so. For example:

1. The student will describe an object in a well-organized theme of 75-150 words, written in class. Any reference may be used. Description will follow the outline on p. 94, no. 4, of the text.
2. The student will describe an object in a well-organized theme of 75-150 words written in class. Any reference may be used. Description will include: Dimensions, colors, shapes, material, composition, how the object is put together, and the relation of its parts.

The second objective is better stated because it is self-contained.

### From a Course in Literature

(Adapted from *Instructional Objectives Exchange;* see p. 133.)

*Goal:* The student will understand that the meaning of a poem can exist on more than one level.

Objective: Given a poem in class, the student will write a 200-300-word essay explaining the poem (1) on its literal level; (2) on its figurative level, using for evidence of this latter meaning the particular symbol or symbolic cluster through which it is expressed; (3) on the personal level,

relating a question suggested by the poem to the individual's own experiences or observations.

*Goal:* The student will understand the relationship between figurative language and meaning in poetry.

Objective: Given a poem in class, the student will orally identify and explicate important figures of speech such as metaphor, simile, hyperbole, apostrophe, personification, metonymy, etc., in terms of the feelings and ideas contained in each and their importance to the meaning of the poem.

*Goal:* The student will be able to apply a process for the evaluation of a poem.

Objective: Outside of class, given an unfamiliar poem, the student will write a 500-600-word essay evaluating its success. He will apply the following criteria: (1) Are the word choices, the use of images, and the figures of speech fresh? Are they consistent with one another and with the apparent intent of the whole poem? (2) Is there a unity between the form (i.e., repetitive sound, diction, imagery, structure) and the content? (3) Does the poem avoid sentimentality, over-didacticism, overblown rhetoric, and triteness?

*Goal:* The student will understand the genres of the novel and the conventions associated with each genre.

Objective: After reading a novel, the student will be given a description of the genre in which the novel may be classified. In a 100-500-word paper written in class, he will identify the conventions contained within the novel that link it to that genre.

*Goal:* The student will understand the relationship between setting and characters in the novel.

Objective: After reading a novel, the student will note the setting (geographical, occupational, historical and personal) and tell how it effects the characters; that is, how the setting effects motivations, decisions, aspirations, and attitudes toward life revealed by specific

characters in the novel. This objective will be demonstrated by completion of a 10-item short answer quiz in class. 80% accuracy required.

*Goal:* The student will understand the use of point of view in the novel.

Objective: In class, the student will identify the point of view from which a given novel is told and will state how this method of presentation affects the novel's meaning in an essay of 500-600 words.

*Goal:* The student will understand the conflict and the climax of a short story plot.

Objective: In class, the student will briefly state the conflict in a given short story by identifying the opposing forces. He will state the point at which the technical climax occurs—in one paragraph of under 200 words.

*Goal:* The student will recognize allusions to characters and incidents in Greek and Roman myths.

Objective: In class, given a reference to a short myth or to an incident from a longer myth, the student will write an essay of 400-500 words explicating the allusion in terms of the characters and incidents of Greek and Roman mythology.

*Goal:* The student will understand levels of usage in dramatic dialog.

Objective: When called on in class, the student will orally identify the level or levels of usage within a given passage from a play and explain the effects of the level of usage or the change in levels of usage.

*Goal:* The student will be familiar with and apply a process for evaluating a work of non-fiction.

Objective: Given a work of non-fiction, the student will write a 700-800-word essay which applies the criteria cited below to evaluate the effectiveness of the work:

1. What purpose was accomplished by the essay (or other work)? Is this the purpose intended by the author?
2. Are the techniques of presentation appropriate to the purpose?
3. Is there a flaw in the presentation that would prevent the purpose from being accomplished (e.g., distortion of facts)?
4. Did the author express himself clearly so that the audience for whom he was writing could understand him?
5. Did anything in your experience (i.e., other works you have read, things you have seen, beliefs you hold) make the essay more effective or less convincing? (This last question requires a subjective response, in terms of the student's experience rather than in terms of the essay itself.)

## ONE FINAL WORD

In answering these questions, the student must support his statements with references from the text.

The question of quality or judgment regarding the students' responses frequently enters discussions about objectives. If the instructor cannot or will not spell out his criteria for assessing the students' work, he may wish to so state, viz.:

> Outside of class, using any necessary references, the student will write a composition that I, on the day I read it, deem to be imaginative and creative.

By thus acknowledging that his criteria are shifting and/or unknown to himself, the instructor has at least brought a dimension of honesty into the relationship between him and his students.

# Appendix A

# Do the Students Understand the Objectives?

Objectives can be distributed in sets at the beginning of the course or, better still, alternative sets of objectives can be distributed, with the students deciding which objectives they wish to achieve. In either case, however, because objectives must be justified, in large measure, on their effect on student learning, it is important that they be both known to, and understood by, the students in advance of the instructional sequences or media.

A simple procedure to check student understanding is to state each objective together with two possible test situations and

to ask the students which of the measurement possibilities assesses the objective. For example:

1. Objective: In class, with no references the student will name the parts of a solution.

   Which of the following items test this objective?

   A) The substance that is dissolved is the _____.

   B) Substances that are not capable of mixing and forming a solution are _____.

   ____A only

   ____B only

   ____Both

   ____Neither

2. Objective: Given examples of instructor rating forms, the student will list, in 25 words or less, their potential uses and their shortcomings.

   Which of the following items tests this objective?

   A) Attached are 5 instructor rating forms. In 25 words or less, state their potential uses and their shortcomings.

   B) 15 instructional rating forms were distributed last week. Pick any 5 of them and state their potential uses and their shortcomings in 25 words or less.

   ____A only

   ____B only

   ____Both

   ____Neither

This procedure can be followed for each objective or for a sample of objectives. In addition to ascertaining students' understanding, the instructor may gain some information valuable for recasting the objectives so that they better communicate his intent.

# Appendix B

# Reporting Student Achievement

In some situations, it may be desirable for the instructor to report the students' attainment of his objectives to others. A simple procedure can be adopted for this.

### Form A – Class Mean

Form A is used to report change in class performance on examinations. Examination items should measure gain toward specific unit objectives. Although the learning specified in more

than one objective may be tested on a single examination, each objective and the exam items relating to it should be reported separately as though that objective alone had been tested. Mean scores are derived by adding correct responses for the group taking the test and dividing the total by the number of students in the group.

### Form B – Task Performance

Form B is used to report the number of students who have gained ability to perform a certain task. For example, one of your objectives states that students must be able to write a paragraph which meets certain specifications. The change in number of students able to write the paragraph before and after your instructional unit is reported on this form. Another objective may be that students participate in class discussion; a third, that they engage voluntarily in certain out-of-class activities. Form B is used to report student change toward those types of activities.

The form that an instructor adopts depends on whether he is concerned with reporting numbers of students who have attained minimum criterion levels (Form B) or class means (Form A).

Name _____

Course _____

Student Gain Report Form A

Class Mean

Objective: _____

_____

_____

_____

1. Pre-test of _____ items.
2. Number of students taking pre-test: _____ .
3. Class mean score on pre-test: _____ .
4. Post-test of _____ items.
5. Number of students taking post-test: _____ .
6. Class mean score on post-tests: _____ .

Representative Test Item:

Comments:

Name _____

Course _____

Student Gain Report Form B

Task Performance

Objective: _____

_____

_____

_____

1. Number of students achieving objective at pre-assessment: _____ of _____ total in group.

2. Number of students achieving objective at post-assessment: _____ of _____ total in group.

Representative assessment item:

Comments:

# Appendix C

# Sequencing Objectives

The instructor who is preparing a sequence of objectives may find it helpful to ask himself a series of questions:

1. What do I want my students to be able to do when they have completed my course?

   Write down all the skills, abilities, and attitudes you would like them to hold. Spell out separately as many as you can.

   Separate from the total list those which will appear in the future.

2. How will I know whether or not a student has gained those skills, abilities, attitudes?

   Are the abilities such that they may be demonstrated by the student by means of his performing a designated task?

   Are there independent actions which, if taken, would be indicative of his holding certain attitudes?

   Separate the demonstrations into those for which evidence can reasonably be gathered and those for which it cannot.

   Does all seem to follow in general sequence? Am I asking that too little happen to the students? Too much for the time and resources available?

3. What are the circumstances under which demonstration of gained ability (task performance) will occur?

   Which of the tasks may be assigned as test items? Is outside work to be returned to me? Which will be performed voluntarily?

4. What minimum standard or degree of accuracy should be assigned to each task (if appropriate)?

5. What "sub-abilities" lead to each desired end-of-course ability?

   Is the course to be sequential, all leading to a single set of ends?

   Are there discrete abilities for which separate units of the course may appropriately be built?

   If the course is to lead to a single set of end abilities, plot a sequence of sub-tasks.

If the course includes discrete units, what sequence of sub-tasks within each unit will lead the student to the end-of-unit ability?

6. When all abilities and tasks have been plotted, write them as specific, measurable objectives which meet the criteria explained in this bok.

7. Failing all this, simply write a complete set of test items or quizzes and recast the items and intent in the objectives format. The gaps and overemphases—if any—will appear.

# Appendix D

# Class Criteria

What percent of the students in a given class may be expected to attain the objectives? As indicated in the text, this question depends on a great number of situational indices. The answer usually comes in the form of a "trade off" between percents of students expected to attain the objectives and degrees of complexity in the objectives themselves.

If each objective demands a high degree of accuracy, the percent of the class attaining it will probably drop as the level of complexity rises:

| Percent of class | Level of complexity of task | Objective Criterion or percent accuracy demanded |
|---|---|---|
| 90 | Knowledge | 90 |
| 80 | Comprehension | 90 |
| 70 | Application | 90 |
| 50 | Analysis | 90 |
| 25 | Synthesis | 90 |
| 10 | Evaluation | 90 |

In this case, although the instructor anticipates that 90 percent of his class can respond accurately to 90 percent of the items written at the level of "Knowledge" or simple recall, he expects only 25 percent to be able to "synthesize" with a similar degree of accuracy.

On the other hand, if the instructor accepts a committment to bring a sizable percent of his class to the attainment of *all* the objectives, the criterion level in each objectives will probably have to be dropped as the complexity increases:

| Percent of class | Level of complexity of task | Objective Criterion or percent accuracy demanded |
|---|---|---|
| 90 | Knowledge | 100 |
| 90 | Comprehension | 90 |
| 90 | Application | 80 |
| 90 | Analysis | 70 |
| 90 | Synthesis | 50 |
| 90 | Evaluation | 25 |

The design adopted depends on institutional or individual policy. If grade marking (population sorting) is considered necessary, the first scheme may be adopted and marks assigned accordingly. But if the instructional plan is to cause the majority of the students to learn to perform the designated tasks, the second is more appropriate.

# Appendix E

# Available Sets of Objectives

The sets of instructional objectives for the courses listed below are available in microfiche or hard copy from ERIC Document Reproduction Service, National Cash Register Company, 4936 Fairmont Avenue, Bethesda, Maryland 20014. For prices and details on ordering, see *Research in Education*, March, 1970, Vol. V, No. 3 or write to the ERIC clearinghouse for Junior Colleges, 96 Powell Library Building, University of California, Los Angeles, California 90024.

Instructional objectives for junior college courses in:

| | | |
|---|---|---|
| ED | 033680 | Accounting (1st semester) |
| ED | 033681 | Accounting (2nd semester) |
| ED | 033682 | Begining acting |
| ED | 033683 | College algebra |
| ED | 033684 | Cultural anthropology |
| ED | 033685 | Architectural drawing |
| ED | 033686 | Biology (1st semester) |
| ED | 033687 | Calculus and analytical geometry |
| ED | 033688 | Chemistry (1st semester) |
| ED | 033689 | Beginning design |
| ED | 033690 | Beginning drawing |
| ED | 033691 | Economics (1st semester) |
| ED | 033692 | Remedial English |
| ED | 033693 | English (subject A) |
| ED | 033694 | English composition |
| ED | 033695 | French (1st semester) |
| ED | 033696 | Geology |
| ED | 033697 | Physical geography |
| ED | 033698 | Geometry |
| ED | 033699 | German (1st semester) |
| ED | 033700 | Health |
| ED | 033701 | African history |
| ED | 033702 | U.S. history to 1865 |

| | | |
|---|---|---|
| ED | 033703 | U.S. history from colonial times to date |
| ED | 033704 | U.S. history since 1865 |
| ED | 033705 | Japanese |
| ED | 033706 | Journalism |
| ED | 033707 | Music appreciation |
| ED | 033708 | Philosophy (1st semester) |
| ED | 033709 | Physical education |
| ED | 033710 | Physics (1st semester) |
| ED | 033711 | Physiology (1st semester) |
| ED | 033712 | American institutions (political science) |
| ED | 033713 | Psychology (1st semester) |
| ED | 033714 | Shorthand |
| ED | 033715 | Spanish (1st semester) |
| ED | 033716 | Spanish (2nd semester) |
| ED | 033717 | Speech |
| ED | 033718 | Zoology |

Specimen objectives may be obtained from many sources in addition to the ERIC Document Reproduction Service. For example, the Instructional Objectives Exchange, a project of the Center for the Study of Evaluation, Graduate School of Education, University of California, Los Angeles, California, 90024, has 16 sets of behavioral objectives available for various courses at the elementary and secondary (K-12) school levels. A complete listing, *Instructional Objectives Exchange Catalog*, is available from the Center on request.

# Bibliography

1. Atkin, Myron J. "Behavioral Objectives in Curriculum Design: A Cautionary Note." *The Science Teacher*, Vol. 35, No. 5, (May 1968).

Some of the limitations in the use of behaviorally stated objectives for curriculum design are discussed. Incompletely stated or unrecognized goals of instruction are often worthy; innovation is less hampered; and unprogrammed "opportune moments" can be more effectively utilized with limited demands for behavioral objectives, according to this author.

2. Bernabei, Raymond. *Behavioral Objectives An Annotated Resource File.* Harrisburg, Pennsylvania: Dept. of Public Instruction.

Nearly 200 books and articles on the general topic of behavioral objectives are listed and annotated.

3. Bloom, Benjamin S. "Learning for Mastery," *Evaluation Comment,* Vol. 1 no. 2, pp. 1-12 (May 1968).

Building on research findings, philosophical contentions, and a view of social needs, the author explores the thesis that almost anyone can learn anything. He concludes that different "aptitudes" are a function of the time it takes for a student to master a particular concept.

4. Bloom, Benjamin S. & others (eds.) *Taxonomy of Educational Objectives. The Classification of Educational Goals. Handbook I: The Cognitive Domain.* New York: David McKay Company Inc., 1956.

This handbook concerns educational objectives in the cognitive domain, or the recall or recognition of knowledge and the development of intellectual abilities and skills. A definition, illustrative objectives, a discussion of problems and considerations in testing objectives, and examples of test items in each of the 6 categories in the taxonomy are presented.

5. Boardman, Dorris E. *The Effects of Advanced Knowledge of Behavioral Objectives on Students' Achievement in Remedial Chemistry.* Los Angeles: UCLA Graduate School of Education, 1970 (unpub. Dissertation in progress).

6. Burns, Richard W. "Behavioral Objectives: A Selected Bibliography." *Educational Technology,* Vol. 9, No. 4, pp. 57-8 (April 1969).

Nearly 50 books and articles on the general topic of behavioral objectives are listed and annotated.

7. Burns, Richard W. "Measuring Objectives and Grading." *Educational Technology*, Vol. 8, No. 18, pp. 13-14 (Sept. 30, 1968).

   This article presents 2 methods by which teachers can write (or rewrite) objectives that meet the requirement of most schools for grades to be assigned to students for differing levels of achievement.

8. Canfield, Albert A. "A Rationale for Performance Objectives." *Audio-Visual Instruction*, Vol. 13, No. 2, pp. 127-29 (Feb. 1968).

   The utilization of rationales or motivational elements in performance objectives are illustrated, and examples are given to show how the meaningfulness and attractiveness of an instructional objective may be enriched or enhanced for both an instructor and his learners.

9. Cohen, Arthur M. *Dateline '79: Heretical Concepts for the Community College.* Beverly Hills, California: Glencoe Press, 1969.

   A critique of current practices provides a rationale for the community college of 1979. Proposed is an institution with several branch campuses, students enrolling in and leaving courses at will, 6 different media forms in each course, a general education curriculum, and a faculty that specializes in instruction.

10. Cohen, Arthur M. "Defining Instructional Objectives" in: *Systems Approaches to Curriculum & Instruction in the Open-Door College.* Los Angeles, California: UCLA Junior College Leadership Program, Occasional Report #9, January 1967, pp. 27-28.

11. Cohen, Arthur M. and Brawer, Florence B. *Measuring Faculty Performance.* ERIC Monograph No. 4. Washington, D.C.: American Association of Junior Colleges, 1969.

The authors review several commonly used faculty evaluation practices, concluding that none addresses itself to student learning, the authors' "ultimate criterion."

12. Cohen, Arthur M. "Teacher Preparation: Rationale and Practice," *Junior College Journal,* Vol. 37, No. 8, pp. 21-25 (May 1967).

3 types of teacher training sequences are described, each resting on the rationale that teaching is the process of causing learning toward specific, measurable objectives.

13. Dalis, Gus T. *The Effect of Precise Objectives Upon Student Achievement in Health Education.* Los Angeles: UCLA Graduate School of Education 1969 (unpub. Dissertation).

14. Diederich, Paul B. "Cooperative Preparation and Rating of Essay Tests." *English Journal,* Vol. 56, No. 4, pp. 573-90 (April 1967).

15. Educational Technology Publications, Inc. "Performance Contracting as Catalyst for Reform." *Educational Technology,* Vol. 9, No. 8, pp. 5-9 (Aug. 1969).

Local school districts in Texarkana will contract with private corporations to remove learning deficiencies in potential dropouts. The major portion of the request for proposal to the United States Office of Education is included.

16. Gagné, Robert M. "The Analysis of Instructional Objectives for the Design of Instruction" in *Teaching Machines and Programmed Learning, II,* Robert Glaser, ed. Washington, D.C.: National Education Association of the United States, 1965.

The author reviews the several purposes for defining instructional objectives, emphasizing their use in the overall design of instruction. He stresses that complete and unambiguous statements of tasks to be performed at the end of instruction are needed to identify the categories of behavior to be learned. His categories are response differentiation, association, multiple discrimination, behavior sequences, class concepts, principles, and strategies.

17. Hilgard, Ernest R. and Bower, Gordon H. *Theories of Learning,* New York: Appleton-Century-Crofts, 1966 (3rd edition).

18. Krathwohl, David R. & Others. *Taxonomy of Educational Objectives. The Classification of Educational Goals. Handbook II: Affective Domain.* New York: David McKay Company Inc., 1964.

    An overview of the affective domain and its classification structure is presented, followed by a more detailed, illustrated classification structure with sample objectives and test items.

19. Kropp, Russell P. & Others. *The Construction and Validation of Tests of the Cognitive Processes as Described in the "Taxonomy of Educational Objectives."* Tallahassee, Florida: Florida State University, Institute of Human Learning, 1966.

20. Lessinger, Leon M. and Allen, Dwight H. "Performance Proposals for Educational Funding: A New Approach to Federal Resource Allocation." *Phi Delta Kappan,* Vol. 51, No. 3 (Nov. 1969).

21. Lindvall, C.M. "The Importance of Specific Objectives in Curriculum Development." In: Lindvall, C.M. (ed) *Defining Educational Objectives.* Pittsburgh, Pennsylvania: University of Pittsburgh Press, 1964.

The problem of defining objectives within a large-scale curriculum-development effort is discussed. The central problem is presented as translating general statements of desired course outcomes into specific statements of expected end-of-course student abilities, maintaining a balance between specificity and meaningfulness.

22. Loughary, John W. "The God of Complexity," *Educational Technology,* Vol. 9, No. 9, p. 23-25 (Sept. 1969).

23. Mager, Robert F. *Preparing Instructional Objectives.* Palo Alto, California: Fearon Publishers Inc., 1962.

The author argues that instruction toward any intended outcome must be based on meaningful objectives. These objectives should identify the desired behavior by name, and define the desired behavior by describing it. Criteria of what is acceptable performance by the learner must also be specified, thus communicating to the learner the instructional intent of the material to be learned.

24. Mager, Robert F. and Clark, Cecil. "Explorations in Student Controlled Instruction," in Anderson, Richard C. & Others (eds.) *Current Research on Instruction* New Jersey: Prentice-Hall Inc., 1969.

25. Mager, R.F. and McCann, J. *Learner-Controlled Instruction.* Palo Alto, California: Varian Associates, 1961.

26. McNeil, John D. "Antidote to a School Scandal." *Educational Forum,* Vol. 31, No. 4, pp. 69-77 (Nov. 1966).

Methods by which classroom teachers are supervised and evaluated are reviewed, and the author notes that seldom, if ever, do supervisors or evaluators take pupil learning into consideration.

27. McNeil, John D. "Concomitants of Using Behavioral Objecitves in the Assessment of Teacher Effectiveness." *Journal of Experimental Education*, Vol. 36, No. 1, pp. 69-71 (1967).

Several experiments designed to test the hypotheses that supervision of teachers which focused on pupil attainment of criterion behavior would cause supervisors to perceive their teachers as more effective instructors, pupils to show greater gains in desired directions, and teachers to perceive supervisor's suggestions as more relevant and helpful are reported. There is almost unanimous agreement among teachers that "results in terms of pupil gains" is the best basis for evaluating instructional effectiveness.

28. Popham, W. James. "Probing the Validity of Arguments Against Behavioral Goals." In: Anderson, Richard C. and others (eds.) *Current Research on Instruction.* New Jersey: Prentice-Hall Inc., 1969.

    11 reasons educators commonly offer in opposition to stating objectives in behavioral, measurable terms are presented and discussed, with an emphasis on demonstrating, by example, their invalidity. The author concludes that none of these reasons is sufficiently strong to deter educators from writing and using precise behavioral objectives for all of their instructional goals.

29. Rosenthal, Robert, and Jacobson, Lenore. *Pygmalion in the Classroom.* New York: Holt, Rinehart and Winston, Inc., 1968.

    From laboratory animals to elementary school students, the effects of teacher expectations on learner behavior are reviewed. The authors conclude that students learn best when teachers expect them to learn.

30. Smith, Robert G. Jr. *The Development of Training Objectives,* Washington, D.C.: The George Washington University Human Resources Research Office, 1964.

    Designed for use by military training personnel, this pamphlet describes the process of translating tasks or

jobs into performance objectives using the system analysis approach.

31. Thorndike, Robert L. "Helping Teachers Use Tests." *Measurement in Education,* Vol. 1, No. 1, pp. 1-4 (Oct. 1969).

    A case is made for evaluation of meaningful learning both in teacher-written and standardized tests. The author defines meaningful learning as student understanding of a concept, principle, or procedure such that he is able to apply it in circumstances different from those used in instruction.

32. Tyler, Ralph W. *Basic Principles of Curriculum and Instruction.* Chicago: The University of Chicago Press, 1950.

    A rationale for viewing, analyzing, and interpreting the curriculum and instructional program of an educatonal institution is presented, along with the kinds of problems involved in developing a curriculum and a plan of instruction and techniques by which such problems may be attacked. Selecting, stating, and evaluating educational objectives is covered in an easy-to-read manner.

33. Tyler, Ralph W. "Some Persistent Questions on the Defining of Objectives." In: *Defining Educational Objectives*, C.M. Lindvall (ed.). Pittsburgh, Pennsylvania: University of Pittsburgh Press, 1964.

    Reactions to the following 4 questions from the point of view of the administractor, teacher and student are provided: 1) Why is it now considered important to define objectives clearly when, in the past, teachers have done excellent work without any clear statement of goals; 2) what should be included in a clear definition of an educational objective; 3) what considerations should be taken into account in the selection of objectives; and 4) what are the steps taken in the derivation of educational objectives?

# About the author...

ARTHUR M. COHEN is Assistant Professor of Higher Education and Director of the Junior College Teacher Preparation Program at the University of California, Los Angeles. He is also Principal Investigator and Director of the ERIC (Educational Resources Information Center) Clearinghouse for Junior Colleges and frequently acts as consultant on junior college curriculum and instruction. Dr. Cohen obtained his A.B. and M.A. in History from the University of Miami and his Ph.D. in Higher Education from The Florida State University. His articles have appeared in *Junior College Journal*, *Journal of Teacher Education*, and *Improving College and University Teaching*. In 1969, Glencoe Press published his widely acclaimed DATELINE 79: HERETICAL CONCEPT

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